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THE

VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

EDITED BY

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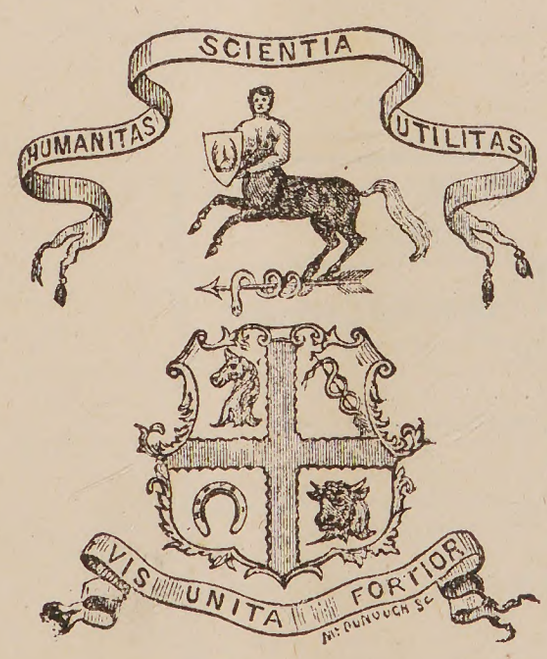

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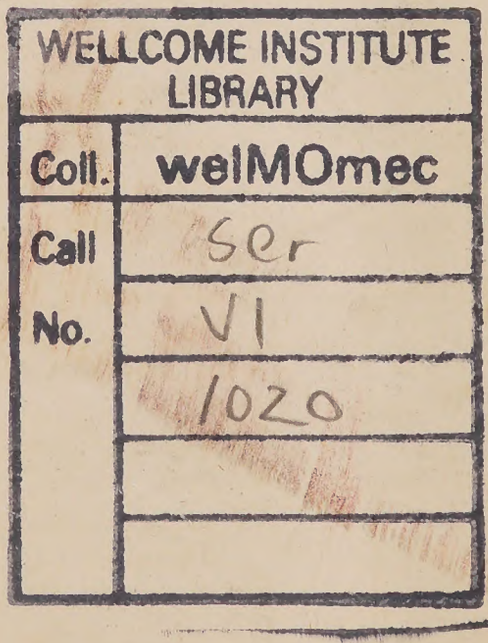
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JULY, 1879.

REVIEW OF THE PRINCIPAL FACTS HITHERTO ASCERTAINED CONCERNING *BACTERIA*, WITH THE SPECIAL OBJECT OF NOTING THEIR INFLUENCE UPON THE HIGHEST ANIMAL ORGANISMS.*

BY J. H. STEEL, M.R.C.V.S., DEMONSTRATOR OF ANATOMY, ROYAL VETERINARY COLLEGE.

In bringing before your notice a subject of this nature, I am endeavouring to show the vast importance of Biological studies to the members of our profession. I have spent much time in ascertaining the views of the leading authorities upon the subject—English, French, and German; and that this paper may have more value, I have affixed to each of the principal statements in it the authority to which I owe the information (where possible the English translation or summary). These will serve to indicate, to a certain extent, the works I have consulted, but wherever, I was enabled I have read the author's own paper or work rather than trust to the statements of summaries or reviews. You will see that I have handled my matter after the manner of a student, and you will doubtless not regret that I have not presumed to speak as a master on a subject which requires for its due elucidation experimental experience, and long years of

* Read before the Central Veterinary Medical Society, May, 1879.

thought. Unless, however, I am much mistaken, I shall not fail to direct in a new channel the thoughts of those who have not made this matter a special study, and I hope, too, to show them something of which they will not wish to be ignorant. In the general run of professional detail, neither time nor opportunity is given for research through numerous scientific periodicals ; so I have thought I could be of service by collecting information on Bacteria, reducing it to order, striking out theory, and giving due prominence to each fact according to its importance, showing its bearings on leading problems and practical difficulties—in fact, by preparing and serving it up in such a manner as may render it most palatable and best adapted for hasty and easy mental digestion.

Every successive stage in the march of scientific progress seems to draw more closely the ties which unite medicine and surgery on the one hand, and, on the other, that branch of knowledge which has recently received the distinctive name, Biology. Men begin to see the grand principle of unity which lies beneath the apparent complexity of life, begin to understand that research must be from the general simple forms to the special and more differentiated, that if we would be in a position to appreciate life in the higher animals we must know more of it, not only in the lowest animals, but also in the vegetable organisms. Until we are much better assured than now of the conditions of life in its simplest form, we shall not be in a position to successfully combat its perverted conditions as occurring in disease. The knowledge that the most remarkable phenomena of the body are accomplished by the action of cells which "live, grow and have their being" in no direct relation with the body as a whole, but depend upon the co-operating structures, and the general vitality, only for their conditions of existence, leads us to think carefully about the lives of beings resembling them somewhat, if only in simplicity ; and we conclude that, however minute a being, its life is not "flat, stale, and unprofitable." But my subject also derives interest from the fact that minute organisms enter into the systems of their immeasurably higher fellow-creatures in countless myriads, and by force of numbers bring about disorganization—some say even starve their victim into

submission. Not content with this, the Bacterian army, like the *Fama* of Virgil—

"Mobilitate viget, viresque acquirit eundo"—

and hecatombs of victims testify to its prowess.

My subject, too, leads us towards an inquiry into *putrefaction*, which is attributed to the influence of microscopic organisms: hence we might ramble to the undoubtedly valuable modification which *Lister* has brought before the world as "Antiseptic Surgery," and has based upon the presence of living ferments in the atmosphere—others base its beneficial influence upon the combat with particles which, according to the *germ theory*, are omnipresent. From a brief notice of this view, we are naturally led to a passing remark or two on the question of *Spontaneous Generation*, and the *Origin of Life*. It must not be imagined that within the limits of this paper I am going to attempt to discuss all the bearings of Bacteria, but I shall need, in the course of my remarks, to allude to prevalent theories, and to that which is provisionally accepted in the importaut matters above-mentioned. Such being the surroundings of the subject, I hope to be enabled to interest you in the investigation of Bacteroid organisms—minute bodies which have been considered devoid of life, and which have been alternately thought animal and vegetable—indeed, frequently are considered not sufficiently differentiated to exhibit characters distinctively animal or vegetable—on the verge of the extreme present limits of artificial vision, on the borderland between the living and the dead, but, withal, forming the centre on which mighty questions hinge—such are the bodies with which I have to deal.

If an organic infusion be exposed to the atmosphere, especially at a somewhat elevated temperature, it will, after a time, acquire upon its surface a pellicle, microscopic examination of which will show, besides various fungi (as *Mucor* and *Penicillium*). gelatinous masses, containing, disseminated through them, a number of somewhat bright bodies of more solid substance. The solution below the pellicle is undergoing decomposition; the gelatinous layer has, from *Pasteur*, received the name of

Mycoderma. In the fluid below will be found bodies of a cellular and others of a granular nature, *inter alia* elongated, highly refractive bodies, detectible by magnification 500 times, capable of spontaneous movement, and multiplying chiefly by transverse fission: these are *Bacterium termo*—the organism on the presence and vital action of which putrefaction is said to depend. The rapid movements of this protophyte have been attributed, by Messrs. Dallinger and Drysdale, to flagella, or whip-like processes, placed at the poles of the body, their diameter being given as $\frac{1}{210,000}$ of an inch (in the spirillum form).* Some animalcules—as Infusoria—are found in putrefying solutions; but they and the fungi are secondary, for the direct agency of Bacteria in causing putrefaction stands proved by the following arguments:—

1. They are invariably present when putrefaction occurs.
2. Means which prevent their access or development are antiseptic.
3. In proportion to the rapidity of their development is the rate of putrefactive decomposition.
4. Addition of Bacteria to a previously undecomposed organic solution suffices to cause rapid putrefaction.
5. The addition of no known substance devoid of Bacteria can produce the same effect.

The conditions which are required for the development of these organisms are:—

1. The presence of oxygen.
2. A temperature between 18°C. and 60°-62°C. (Cohn) for persistence of vitality; between 5½°C. and 35°C. for reproduction.†
3. Moisture.
4. Carbonaceous and nitrogenous matters.

If either of these conditions be absent no decomposition of a putrefactive nature will occur, but the food supplied for its growth is not necessarily organic, for experimenters are accustomed to use for Bacterial development certain "cultivating solutions," consisting of ammonium salts—generally the tartrate—sugar, and certain salines. Citric acid may replace the tartaric, but no other vegetable acid is useful. The following are three such solutions:—

* British Association Report, 1878.
† Howarth and Eidam. *Quarterly Journal of Microscopical Science*, N.S., vol. xvi., p. 277.

Cohn's.		*Pasteur's.*	
Potass. phosph. ...	1·0 pts.	Pot. phosph. ...	20 pts.
Magnesiæ sulph. ...	1·0 „	Calc. phosph. ...	2 „
Ammoniæ tart. ...	2·0 „	Mag. sulph. ...	2 „
Calcii chloridi ...	0·1 „	Amm. tart. ...	100 „
Aquæ dist. ... ...200·0 „		Cane sugar ...	1,500 „
Mft. Soln.		Water	8,576 „
			10,200 „

Lister's.

Water from the tap	5,000 grs.
Salts from wood ashes ...	5 „
Lump sugar	250 „
Ammon. tart.	50 „
Mft. Soln.	

The result of the vital activity of these minute organisms is that the nitrogenous matters are consumed and certain gases are set free. In the case of organic matter the principal products are carbonic anhydride, sulphuretted hydrogen, and ammonia; in the case of nutritive solutions—if sugar is present—carbonic anhydride, glycerine, acetic, butyric, and succinic acids; if only tartaric and citric acids, without sugar—formic, acetic, and butyric acids result.*

When the nitrogenous matter of the substratum in which they have developed begins to "run short," the Bacteria assume the *Zooglea* state, which seems to depend upon swelling of their membranes, in which, as a gelatinous matrix, the bacterial particles become embedded; in this form they collect on the surface to constitute the pellicle, and, some say, still undergo multiplication. As the fluid basis beneath evaporates, the refractive bodies escape from their gelatinous coating and pass into the air, probably as minute globular masses, which surround the bodies of higher beings on every side, are introduced by every way into the animal system, and are ready at any time, when fit conditions arise, to generate putrefaction. In the early stages of putrefaction *Micrococci* first appear: these are spherical granules often apparently connected together by an intercellular substance, capable of motion and multiplication by transverse fission, the process often being so incomplete that the resulting portions remain adherent in a rosary-like chain, constituting the *Leptothrix form.*

* Bucholz. *Archiv für Exp. Path.*, B. vi., § 81.

These have been considered the earliest phases of *B. termo*, but we are not yet in a position to state absolutely that this is so.

We must not neglect to state that there are other theories upon the nature of Putrefaction than that which is known as the "Vital." Substances which most readily undergo putrefaction are those which contain most water, or elementary particles in such a state as to very readily combine together to form water. Also nitrogenous matters are very prone to undergo this change, and nitrogen is remarkable for the laxity of its chemical unions. Substances which most rapidly putrefy are generally remarkable for the complexity of their component molecules, and the large number of atoms of their composing elements: all these facts tend to support the "*Chemical Theory*" of putrefaction. It may also be noted that the rapid removal of watery matters, as by carbolic acid and drying, tends to prevent decomposition; also, agents which solidify albuminoids exert an antiseptic action on organic substances, generally by dehydration. It seems from these facts that by certain means we are enabled to prevent organic matter from affording due pabulum to the Bacterids, but they may also be explained on the theory that staple compounds result from dehydration, such as are not likely to undergo those complex molecular modifications which constitute putrefaction, and which result in the production of those chemical combinations which are most permanent under the surrounding conditions. Dr. B. W. Richardson believes that putrefaction is not due to the mere action of atmospheric oxygen, as was supposed, but to decomposition of water included in the tissues, and the action of the oxygen thus set free in *statû nascente*.* Hence fixing, removal, or condensation of the water in the tissues are preservative processes. "*Licbig's Theory*" is that "when the vital force has ceased to control organic combinations, the nitrogen of the albuminous bodies, by its affinity for hydrogen, decomposes the water of the tissues with formation of ammonia." It is found that free access of air is not essential, for putrefactive decomposition occurring in animal matter, which, when fresh, was completely embedded in paraffin. And it has been observed that

* Cantor Lectures. *Medical Examiner*, 1878, p. 300.

free access of air does not necessarily produce putrefaction; and hence it is argued, in opposition to the above chemical theories, "that albuminoid matters do not in themselves possess the power of self-destruction." *Dr. Roberts*, at the Manchester Meeting of the British Medical Association, said, "Organic matter has no inherent power of generating Bacteria, and no inherent power of passing into decomposition; Bacteria are the actual agents of decomposition."* *Bastian* tells us, "In Liebig's time a ferment was regarded as a portion of organic matter (not necessarily living) in a state of molecular change ('motor decay'), which by virtue of its own unstable nature was capable of communicating molecular movement (chemical change) to other unstable or fermentible mixtures." And, "Units of living matter are not sole ferments, since fermentation and putrefaction may be initiated in their absence; and since it can be shown that mere particles or fragments of organic matter can act in this capacity,"† some have described the germs of Bacteria as such particles, mere "*Splitterchen*" of Bacteria; but we shall see reason to think otherwise.

(To be continued.)

PURPURA HÆMORRHAGICA.

BY ALFRED BROAD, M.R.C.V.S., LONDON.

THE condition of blood peculiar to this interesting disease, and from which it derives its name, is produced, doubtless, by some hindrance or change in the action of the excretory organs—the skin, liver, or kidneys; and though in the human subject it is sometimes met with as a simple affection, with our patients it is usually a more or less formidable sequel of a debilitating disease. This is a cause which the following case well illustrates, as the appearance of the horse, and course of the ailment preceding the purpuric symptoms, so clearly indicated defective purification, as well as mal-nutrition of the blood. It is, however, the rather unusual manner of the development of the disease which is the point of interest in this instance.

* *Lancet*, 1878, i., p. 306.
† Paper read before the Pathological Society. See *Veterinarian*, 1875.

The subject of the case was a Bay Gelding, seven years old, very recently purchased. It had a hard run with hounds while out of condition, and after a few days' interval was driven a long day's journey. It then remained standing at livery, and was not worked for two or three weeks. I first saw the patient on the 31st of March last; it was said to have had a cold for some time, and the owner of the stable attributed all to the two days' work, saying the horse had not been well since.

The symptoms were :—dullness, loss of appetite, staring coat, and general unhealthy appearance, a hard frequent cough and difficulty in expiration, but the number of respirations was not more than sixteen or eighteen per minute; the pulse was forty-eight. The following treatment was carried out: throat stimulated, also mustard applied to the sides on two occasions, legs bandaged and hygienic conditions attended to generally; a dose or two of Ol. Lini, with saline, and stimulant medicines were given; also soft food, and oatmeal gruel by bottle. At the end of a week the condition of the patient was far from satisfactory; the appetite was a little improved, and the breathing easier, but a cough remained; the pulse had not altered, and the lustreless, hollow appearance was quite as marked. Fearing that Farcy or pulmonary complications would supervene in consequence of debility, I commenced the administration of Ferri Sulph. two drachms twice daily, as well as the Liq. Amm. Acet. On the tenth day I detected five or six extremely minute petechiæ on each Schneiderian membrane, and, the exact conditions of the case being then apparent, I gave, in place of all other medicines, two drams of Sulphuric Acid morning and evening, well diluted with gruel or water, changing it occasionally for four drams of Tinct. Ferri Perchlor.

In two days the nasal ecchymoses extended over all the visible portion of the membranes, and were larger and deeper in colour; a swelling of the size and shape of a hen's egg now formed over the nasal bones, and there was slight "filling" of the lower parts of the limbs. A concurrent symptom I will not omit, was the presence of sores in the hind heels, in no way differing from ordinary "cracks" or "chaps," and which caused great pain and difficulty in moving for three or four days. Though there was

exudation into the extremities from the knees and stifles downwards, it was slight compared with the engorgement common in this complaint, and no further hæmorrhagic effusions appeared in any other part. I have scarcely ever met with an instance of this disease in which so little tumefaction was present; but though the degree of tenuity of the blood was comparatively small, the amount of septic change which it had undergone appeared more than common. The absence of excessive swelling of the air passages and extremities was a favourable feature, as respiration and locomotion were not seriously interfered with, neither was there any impediment to feeding, because of the tumefied state of the cheeks and lips, as in the majority of cases. The patches of ecchymoses on the Schneiderian membrane soon presented a most virulent appearance, becoming large and confluent, and covering nearly the whole of the mucous membrane; their colour was of the deepest purple.

I next noticed circular elevations on the skin on the outside of the arms, and on the thighs inside and outside, varying from the size of a sixpence to that of a pea; while below the hocks they were smaller and in clusters. There was no perceptible exudation. Most of the swellings situated above the hock were of the extreme size, and projected clearly above the surrounding parts of the skin, with a flat surface. Upon close examination they were found to be dense crusts, with thick but sharply defined margins, and the hairs included in each were erect. On lifting one at the edge, a black mass of blood was disclosed; but a day or two later, when they were more easily raised, a perfectly healthy granulating surface appeared beneath them. If let alone they gradually became detached, and left small irregular black cicatrices; the crust I removed was rather more than an eighth of an inch in thickness, and included the hairs in the dense layers of epidermis.

About the twenty-fourth day, during the course of these symptoms, and while I yet had some doubts whether Farcy would not be developed, a round, deep seated nodule, an inch and a half in diameter, made its appearance on the near quarter, over the external gluteal muscle; it was unmistakably a farcy "bud." As a change of medicine, I then gave Arsenious Acid in from

five to seven grain doses twice daily, but no further symptoms of the kind appeared, and the "bud" gradually became absorbed. With the improvement in the state of the blood, and the absorption of the petechiæ, general restoration to health commenced; the cough ceased, respiration became tranquil, the appetite was regained, and the healthy gloss of coat and roundness of body returned. The patient was sufficiently well on the 10th of May to take several hours' walking exercise, showing no trace of illness except the numerous little black scars on the thighs and arms. He has since quite recovered his health and condition.

I have endeavoured to give an accurate description of the squamous-like eruption, lest any one should hastily conclude, from the appearance of enlargements, followed by circular sores, that it was Farcy. It clearly was not. The raised skin was as dissimilar to a lymphatic tumour as it could possibly be, and there was nothing like an ulcer; though how far the peculiarity may have been determined by a taint of the above malady in the system is matter for conjecture.

It can hardly be reconciled with Anthrax, for though I am unable to describe that affection from personal observation, except as seen in the mouth and tongue, the account given of the characters of Anthracoid pustules in Fleming's "Sanitary Science and Police" differs widely from what I observed in the case related.

The crusts themselves closely resembled those of Horse Pox, as described in the same masterly work; but there was no resemblance in any other feature, notwithstanding the state of the heels.

It was, I believe, a development of Purpura Hæmorrhagica, probably similar to that described as *P. urticans*, the diseased blood which had accumulated in the spots affected gradually causing loss of vitality in the portions of skin in and beneath which they were imbedded, and which were eliminated in a dried form with the crusts.

SURGICAL AND PATHOLOGICAL NOTES.

BY J. WOODROFFE HILL, F.R.C.V.S., WOLVERHAMPTON.

Fracture of the lower jaw (Foal).

May 17th.—I visited a foal eight weeks old, the property of C. Boycott Wight, Esq., relative to an injury sustained from a supposed kick by the mother. I found the little patient suffering from a fracture of the lower jaw at the symphysis. The anterior portion was easily movable, laterally to the right or left, and crepitus was distinct. Owing to the swollen condition at the seat of injury, I ordered hot fomentations. The swelling by the 19th was sufficiently reduced to admit of the fractured parts being supported and retained in position. The means I adopted were as follows :—A stout piece of gutta-percha was steeped in warm water until softened, and then moulded to the jaw underneath and along each side until set ; the necessary shape of the splint being retained, it was smeared with pitch and fixed on. After its application the animal sucked without difficulty. On the seventh day part of the gutta-percha was cut away to allow the escape of the discharge, which, owing to suppuration, issued from under the chin. In three days afterwards the skin broke on the opposite side, necessitating the removal of another portion of gutta-percha. The following week the whole splint was removed, and the wounds fomented, the jaw being then immovable.

June 14th.—Beyond a little thickening at the seat of fracture and fullness of the submaxillary glands, the animal is quite well and thriving. No exfoliation of bone, as feared, has taken place.

Disease of the heart (Pony).

May 20th.—During a professional visit to C. Boycott Wight, Esq., my attention was called to the body of a pony belonging to a laundry-woman. A few minutes after leaving the house in a small cart with the linen, it fell down dead in the drive. The boy in charge being in great distress about it, I made a *post-mortem* examination, which revealed the heart to be diseased. That organ was much enlarged and hypertrophied; there were numerous ecchymosed spots on its external surface. On opening it both ventricles were found to be empty ; but in the left one, im-

mediately below the valve, and underneath the serous membrane, there was a solid, deep-red glistening body nearly the size of a hen's egg, consisting of a large blood clot, and which, from the extent to which it protruded, must have interfered with the action of the valve. A similar but much smaller one was found near it. The animal, supposed to be fully thirty years old, had been driven seven miles, apparently on an empty stomach ; the latter was now gorged with the food it had partaken of in Mr. Wight's stables. Probably its being overpaced in an exhausted condition, and with a feeble heart, may have given rise to the sub-serous exudation of blood in the ventricles. The intestines were all empty.

Agalactia and Parturient Fever (Bitch).

May 21st.—I visited a bitch (Dandy Dinmont) the property of the Earl of Dartmouth ; she had three days previously given birth to five mongrel whelps. No enlargement of the mammary glands had taken place during pregnancy nor after parturition, and there was not the least secretion of milk ; the teats had a shrunken appearance, and the abdomen was cold. The animal was excessively weak, having to be carried out of her basket to me. The eyes though sunken were unusually bright, nose hot and dry, visible mucous membranes injected ; the body was more or less œdematous, the region of the throat being very much swollen ; pulse feeble and fluttering, respiration very weak. In fact the patient presented a more dead than alive appearance. I prescribed brandy and milk every hour. She died in the early morning. A *post-mortem* examination revealed congested lungs, peritoneum, and uterus. Although only dead a few hours the body had become discoloured, and emitted an offensive smell. The bitch was about three years old, and as far as could be ascertained had not had previous whelps.

Urticaria Febrilis—Nettle-rash (Bitch).

May 21st.—I examined a fox terrier bitch, the property of C. Boycott Wight, as to skin disease, and found the patient suffering from well marked *urticaria febrilis.* The surface of the body was lumpy and whealed, the face swollen, and the abdominal surface and skin on the inside of the thighs and forearms covered

with elevated red patches. The bitch was dull and feverish. I prescribed an aperient, and afterwards Spts. Ammon., Arom., and Tinct. Ferri. She was convalescent in four days.

June 11th.—The rash has appeared again. She is being treated as before. Stimulating diet prohibited.

Mania Puerperalis (*Cow*).

May 23rd.—In the evening I was requested to attend at J. C. Major's, Esq., to examine a cow which had that day shown peculiar symptoms of illness. She had calved fourteen days previously. On my arrival I found the animal, a large short-horn, in the following condition :—Eyes wild and bloodshot ; pulse accelerated ; respiration short and heaving at the flank ; secretion of milk diminished. On walking her out of the box she staggered about in such an extraordinary manner that I deemed it advisable to get her in again as quickly as possible. I prescribed a diffusible stimulant—Ether and Arom. Spts. Ammon., and a warm mash. The calf had already been removed, as no affection was displayed for it.

24th.—Better. Pulse 48 ; eyes more natural ; staggering gone, but agitation still manifest. The bowels being confined, I ordered a pound of sulphate of magnesia. Milk no more abundant, and appetite impaired.

25th.—I was called at night, and found the patient lying. On urging her to stand she was only able to raise her hind quarters ; after a little time we got her up, when she reeled about as on my first visit. Eyes exceedingly wild and blood-shot ; head continually tremulous ; pulse 60 and hard ; muzzle dry and hot ; respiration hurried. I opened the jugular vein, but was only able, though I enlarged the orifice with a lancet, to get barely one and a half pint of black tarry blood, which immediately coagulated. Administered half a pint of brandy in water, and, the bowels being still constipated, ordered another pound of sulphate of magnesia. The cow to be watched during the night. She had eaten but little. Diet, mashes and gruel.

26th.—Brain symptoms have disappeared ; pulse and breathing normal ; bowels relaxed. Prescribed Ether and Arom. Spts. Ammon. every four hours in gruel or linseed tea.

6 *p.m.*—Visited her again. Was informed by the bailiff she had been considerably worse during the day, the paroxysms coming on very severely towards 4 o'clock. She was now, however, again herself. Milk still sparingly secreted, and having a greenish tint. Appetite no better.

27*th.*—Fetched at 6 a.m., and was informed she had been furious; and with the head thrown back against the right shoulder she had turned round and round like a top for two hours without cessation. I found her looking heavy about the eyes and drowsy; pulse 48; extremities warm; milk more palpably green. I now tried the calf with her, and for a time she seemed more contented. Diffusible stimulants continued, with the addition of tincture of iron.

Visited her again in the evening. She had been again much worse during the day, especially towards 4 o'clock, at which time the bailiff informed me she always had bad turns; but she was now again easy. Constipation being present, I ordered half a pint of castor oil on a pint of warm water; medicine as usual. Calf allowed to visit her.

28*th.*—No bad symptoms had again been presented; appetite returned, and the animal looking out for solid food; compelled to remove her bedding, as she was eating it. Tonics prescribed and gradual return to usual food.

29*th.*—Convalescent.

June 9*th.*—The bailiff informs me she has since occasionally shown drowsy symptoms, but feeds well, and in all other respects appears to be healthy.

Editorial.

THE MODE OF TRANSMISSION OF BOVINE CONTAGIOUS PLEURO-PNEUMONIA, AND THE VALUE OF PROTECTIVE INOCULATION.

The fact that the contagious Pleuro-pneumonia of bovines still prevails extensively in this country, and is not likely to be extinguished for a long time—if ever—should the present measures alone remain in force, is a sufficient reason for so frequently alluding to it, and keeping our readers well posted up with regard to it.

The experiments at the Brown Institution, the account of which now appears in this Journal, throw but little, if any, light upon obscure points

in the pathology of the malady; and with regard to its mode of transmission, we fear they are little else than misleading. The value of experimentation no one can deny, and when it furnishes positive results, and especially when these are in harmony with clinical observation, then is its value very great. But when experimentation only yields negative results, and clinical experience points to positive conclusions, and more particularly when negative experiments are suspected to be so, either from insufficiency in number, an absence of care in devising them, or inattention to the conditions upon which success depends, then it does not deserve much confidence. In the first volume of the VETERINARY JOURNAL (p. 415), we went carefully into the question as to whether zymotic Pleuro-pneumonia is conveyed solely by the breath of the living animal or in other ways, and we were forced to the conclusion, from the clinical facts before us, that the breath of the diseased ox was *not the only mode* of transmission. That conclusion has certainly not been weakened, but rather strengthened, since that time; inasmuch as it has been fortified by a host of trustworthy and unprejudiced observers, not only on the continent of Europe, but also in this country—as will be seen by referring to Professor Walley's praiseworthy treatise: "The Four Bovine Scourges." The notion that the contagium could only be conveyed by the breath was, we believe, founded on one or two imperfect experiments by those who appear to have been but little acquainted with the nature of the disease, or of what had been ascertained with regard to it by scientific investigators, and whose knowledge of contagious disorders in general, and their mode of dissemination in particular, was rather vague.

One of the objects aimed at in the experiments carried on at the Brown Institution on behalf of the Royal Agricultural Society, was "to ascertain, by experiment, by what different ways a healthy animal can be infected." In this experiment the example of the promulgators of the "breath theory" was followed—though differing from it, in that the animals which are not susceptible to infection were not included; in this respect there was a departure. "The lungs of animals which had been slaughtered in an advanced state of the disease were placed, in the fresh state, under the noses of ten healthy animals of all ages. As none were infected (the details of the experiments are of the most meagre description, and no mention is made of the period during which the cows were under observation), it did not seem "necessary to repeat" the trials in a systematic manner, the more so as the persons who attended on the animals were in the habit of handling the diseased organs, which were at that time frequently brought to the Institution for pathological examination." The confession is here made that the experiments were not made in a systematic manner; and this alone is sufficient to condemn the dangerous conclusion arrived at. If it had been remembered that experiments at the same institution with regard to the transmissibility of Foot-and-mouth disease, had also at one time yielded negative results, and afterwards were successful, surely a systematic investigation would have been deemed necessary! As it is, though we willingly give Dr. Burdon Sanderson every credit for his labours in elucidating this and

some other diseases of animals, we cannot help thinking that the experiments just alluded to are most untrustworthy, so far as the deduction evidently made from them is concerned. Why were not such experiments conducted in a systematic manner? Nothing can be more important in our dealings with destructive contagious diseases, such as that now under consideration, than an exact knowledge of the manner in which they can be spread. The diseased lungs of dead animals were not, one would imagine, the most likely agents to infect—at least they are not usually the media by which infection is supposed to be conveyed. Why were the ten animals which are reported to have proved refractory to the influence of these lungs and tainted attendants, not exposed to infection by the various other ways in which the malady is universally recognised to be conveyed? Could they not have been kept in the same shed with a diseased cow, or put into a place where the scourge had prevailed? Might they not have been fed on food soiled by sick oxen, and, in fact, systematically tested in every way, and for a reasonable period? And, even then, had they still remained uninfected, would it have been unreservedly accepted by those who know the malady so well that the disorder is not communicable except through the breath?

In warning agriculturists and the veterinary profession against receiving with implicit confidence the conclusion arrived at in this report, we have no intention whatever to reflect upon the ability or good faith of the reporter, but simply to point out that the experiments do not fulfil all the demands of pathological investigation, and are consequently incomplete and unreliable. In the article in the VETERINARY JOURNAL above mentioned, we said :—"Those who are accustomed to experiment, know that even with very contagious maladies every animal exposed to the contagion will not receive it; and when we know that only from thirty-five to sixty-eight per cent. of healthy cattle become diseased when the contagion is introduced among them, we can easily understand the futility, or it may be the danger, of attempting to arrive at conclusions from experiments on a very few animals.

To this opinion we have now all the more reason to adhere, from the report of the experiments at the Brown Institution; though, at the same time, we are quite ready to believe that this serious disorder can only be conveyed by the breath of the sick animal, when we are furnished with evidence sufficient in quantity and quality to outweigh that of the clinical observers who maintain the opposite opinion.

With regard to the protection afforded by inoculation, there cannot now be any reasonable doubt, except with those whose unvarying prejudice to the operation renders them incapable of acknowledging the power of stubborn facts. The French Commission, appointed so long ago as 1851, reported in its favour; and it has more or less met with the approval of the highest veterinary authorities on the Continent of Europe, some Governments—as that of Holland—making it compulsory when an outbreak of Pleuro-pneumonia occurs: so confident are they in its efficacy. In Australia and South Africa, where it only too often has been performed in the rudest and most haphazard manner, its results have been also most striking. But in this country it has not gained

much favour. Soon after its advantages were demonstrated by Dr. Willems, of Hasselt, who introduced it to notice, the Royal Agricultural Society of England, well aware of the terrible havoc the disease was making in these islands, sent the Cattle Pathology Lecturer of the Royal Veterinary College to Belgium, to report on the operation and its results. Veterinary Pathology and pathological anatomy were in those days, so far as England was concerned, in a very rudimentary condition indeed; consequently, the report was unfavourable to inoculation as a protective measure, and it never had a fair trial. The evil results of the operation were ascribed to *Septikæmia*, and its good effects were altogether denied. This condemnation has been persistently maintained by those who first published it, and by some others who have not given their attention or who did not understand the requirements of successful inoculation, closely to it, nor yet are sufficiently acquainted with pathology to perceive that inoculation really gives rise to special infective processes, very different indeed from *Septikæmia*.

Notwithstanding the strong prejudice against it by those who were supposed to be high authorities, inoculation has not been quite lost sight of in this country; and among unsuccessful attempts, apparently due to ignorance of the when, where, and how to operate, must be recorded others which yielded most satisfactory results in England, Scotland and Ireland. It is indeed strange that no attempt was made by those who should do these things, to institute a systematic inquiry into the value of inoculation, and the morbid process it produces. It is probable that had the Royal Agricultural Society been aware of what was going on abroad, it would long ago have appointed a committee of unbiassed investigators to make inquiries and experiments. In the report which we are now referring to, Dr. Burdon Sanderson, while giving inoculation some credit as a protective or preventive measure—from the evidence of the French and Australian reports—yet alludes to the risks attending it, as ordinarily performed, as too serious to admit of its adoption. He, therefore, while attempting to prove whether it was really of value, has also endeavoured to obviate these risks by the intra-venous injection of the virus. For the results we refer our readers to his report; but we may note that the idea of introducing the virus directly into the circulation, and so procuring immunity, is probably due to Chauveau's interesting experiments with vaccine virus. We may also remark that the intra-venous injection of pleuro-pneumonic virus is far from being an easy operation, and is very much more likely to be attended with serious results than another which we shall notice presently. Besides, the number of experiments is far too small, and altogether too unsatisfactory and inconclusive, to deserve anything more at present than passing comment. There are several points in the report to which strong exception can be taken on grounds of general pathology, but we forbear to extend our remarks beyond the subject of Pleuro-pneumonia.

One of the great objections offered by the opponents of inoculation is, that because it does not produce Pleuro-pneumonia, therefore it cannot prevent it. But they evidently forget that vaccination does not

produce small-pox ; and yet we know that when carefully performed it protects the vaccinated individual from that disease. Because inoculation does not give rise to the lung disorder, we cannot assert that it will not prevent the disorder. Years ago we pointed out in the clearest manner possible that inoculation with carefully selected virus did not produce *Septikœmia*, but a peculiar specific infective process in and around the seat of operation, which no other virus we were acquainted with could occasion; and that this process, in its pathological characteristics, much resembled that taking place in the lungs of oxen infected in a natural manner. To this opinion we still more firmly adhere, as a result of recent inquiry and observation, especially in Edinburgh, where Mr. Rutherford's highly successful, intelligent, and scientific practice of inoculation on a larger scale than has perhaps ever before been attempted in this country, leaves nothing more to be desired in the way of evidence as to the absolute immunity conferred by inoculation. For nearly forty years Edinburgh has been more severely scourged by the malady than, perhaps, any other part of the three kingdoms. Previous attempts at inoculation had been attended with such fatal consequences, that even those dairy keepers who were brought to the verge of ruin by the disease, preferred it to the risks of inoculation; and the strongest antagonists of the operation, we think, were to be found there. Now, they are its staunchest advocates, and if the most convincing evidence in favour of this measure is to be sought for, it will undoubtedly be found among these people. No animal inoculated by Mr. Rutherford has ever been known, no matter how much it may have subsequently been exposed to infection, to become diseased, and the dairymen have no fear whatever in introducing suspected or sick animals among those inoculated. So carefully and skilfully is the operation performed and its immediate results watched, that the mortality is diminished to one per cent., an average which will in all probability be still further reduced, and which certainly is infinitely smaller than that following intra-venous injection. An examination of Mr. Rutherford's work unmistakably demonstrates that inoculation, to be successful, demands as much skill, and even more precaution, at the hands of the inoculator, than does vaccination from the vaccinator; and that the animal operated upon, after a fixed period of some days, exhibits specific local symptoms followed by a peculiar systemic condition which lasts for some days, and is evidence of constitutional infection—a condition the existence of which has been denied by the opponents of inoculation. There is reason to believe that the action of the inoculated virus is limited to the bovine species, and will not produce either local or general disturbance when introduced beneath the skin of other species—at least, it has not affected persons who have been accidentally inoculated. This will be an interesting point to investigate, and one that can easily be decided. If it is settled in the affirmative, then it will rather invalidate one of the principal arguments advanced by Dr. Sanderson against the specific effect of inoculation.

From the evidence and opinions we have furnished years ago, it will be seen that we were then altogether in favour of protective inoculation;

but our efforts did not avail to popularise the measure. We again urge the members of the profession and agriculturists to give their attention to it. The question as to its efficacy and safety is now beyond discussion or dispute; thanks to Mr. Rutherford, the problem is solved, and the freedom of Edinburgh from Pleuro-pneumonia at the present time—a condition which has not been known to exist for more than thirty years—is mainly, if not altogether, due to his scientific skill, indomitable perseverance, and intelligent enthusiasm. For his services in this matter he has strong claims upon the Veterinary profession, inasmuch as he is, we believe, the first Veterinarian in Europe who has demonstrated that inoculation is a positive, and almost inexpensive protection against the most serious disease affecting cattle. The agricultural public are certainly heavily indebted to him for his services on their behalf, and we commend his labours to the notice of the various agricultural societies. He has been the first veterinary surgeon in this country to show that inoculation is as certain and safe in its object as vaccination, and that it confers as great a boon on bovines as the last-named operation does on mankind. He has incontestibly proved that inoculation can always put an end to an outbreak, and protect from one. His very extensive inoculations have settled, as well as raised, several interesting points in connection with Pleuro-pneumonia, to which we regret we cannot now refer.

The subject has for so long been to us of such importance, that it affords us very much gratification to be able to refer our readers to Mr. Rutherford's paper on inoculation, which appeared in our pages not long ago, and to the following replies to some questions we addressed to him in May, after making personal inquiry into inoculation as practised by him in Edinburgh, while in that city in April last. At an early date we purpose giving some particulars with regard to inoculation on the Continent.

10, BREAD STREET, EDINBURGH, *June 3rd, 1879.*

DEAR SIR,—I have much pleasure in subjoining the following answers to the queries addressed to me in your letter of May 28th.

1st. "Have any of my inoculated animals yet become affected with Pleuro-pneumonia?"—*None.*

I write from a large experience (having inoculated in and around Edinburgh over 2,000 cows), and have no hesitation in expressing my conviction that if an animal is properly inoculated, being at the time of inoculation free from Pleuro-Pneumonia, that animal immediately becomes protected, and will not contract the disease. Hence it is that, given an outbreak occurring, immediate slaughter of the affected and inoculation of the others, results in the outbreak always being arrested within a period of three weeks; the three weeks being ample time for the disease showing itself, should it so have happened that any of these inoculated were at the time of inoculation affected.

In further reply to the query, I would remark that it may be said that perhaps these cows have not been exposed to infection. Well, they nearly all have. All my work has been in badly infected byres; places where, from experience, we know the contagium had lived for an indefinite period of months, or even years, and there the cows also had been exposed to infection from newly bought animals standing under the same roof, and which, not being inoculated, became the subjects of the disease.

Over and over again, I have met with instances in which the disease has carried off uninoculated stock from amidst my inoculated, and never in a single instance has inoculation failed to give immunity.

2nd. "Have I tried inoculation on any other animals than those of the bovine species?"—I have not; but I can affirm that the lymph has no effect whatever on man.

3rd. "Will animals once inoculated successfully take the inoculation a second time as markedly as the first?"—They will not. Perfect inoculation does not admit of re-inoculation, any more than attempting to inoculate an animal that has had Pleuro-pneumonia, or is recovering from it—is always followed by no result whatever.

I would like to mention here that we get inoculation fairly shown even in cattle which are the subject of Pleuro-pneumonia, but only under certain conditions; these being where the exudative stage has not progressed too far, or where it has not fairly set in. At least, I think I have come across such cases occasionally. In cases in which the exudation has fairly commenced, inoculation only hastens a fatal termination to the disease.

4th. "What is now my average mortality?"—One per cent.

In my paper read before the members of the Scottish Metropolitan Veterinary Medical Association lately, I stated that I hoped to be able to reduce it to the above, and I have, so far as the season has gone, succeeded in doing so. I would remark that at least half of the above percentage was preventable, the casualties arising through violation of my instructions. I have inoculated this season more than 400 (all dismissed from my care), with only four casualties, and none of the four were of the ordinary kind, *i.e.*, the inoculative inflammation spreading to the root of the tail, and thence to the anus and urino-genital organs, but from paralysis, the result of exposure to draughts of cold air.

CONTAGIOUS PLEURO-PNEUMONIA IN AMERICA.

[A proof of the following article, from the pen of Professor Law, of the Cornell University, and which is to appear in the *National Live Stock Journal*, has been forwarded to us for publication as additional evidence of the presence of Contagious Pleuro-pneumonia in the United States.]

WITH some writers among us there appears to be a peculiar and inexplicable dread connected with this disease. If this were a genuine dread of the disease itself, accompanied by an earnest desire to rid the country of it at all hazards, it would be laudable. But it is not really the disease which is dreaded, so much as the knowledge on the part of our customers of the presence of the plague in our midst. The plague itself! why that is an exceedingly small matter. We know that that existed in Massachusetts in 1858 and 1860, and was killed out by the energetic action of that State, at a cost of $68,000. We know that since that time it has been repeatedly carried from New York City into Connecticut, where it has been again and again extirpated by the action of the State Commissioners. We know that the Massachusetts Board of Cattle Commissioners visited the SKILLMAN stables, Brooklyn, in 1862, and "found some sick with the acute disease"; and killed one in the last stage of the illness, the examination of which "showed a typical case of the same malady which existed in Massachusetts." We know that the Commissioners reported that

If New York, New Jersey, and Pennsylvania would adopt similar measures to those in this State (Massachusetts), it would be one of the most effective modes of securing the whole community against this disease, which, if allowed to remain, would endanger the best stock in the country, and greatly deteriorate the most substantial food of the people.

We know that the importation of the plague into Massachusetts in 1858 was made in the persons of the Holstein cows imported by Mr. CHENERY, of Belmont. We know, further, that the first importation into Brooklyn, in 1843, was by a Dutch cow landed near South Ferry and taken into a stable near the foot of Joralemon Street. Many still live who can relate all the circumstances of the boasted milking qualities of the imported cow; of her early death; of the infection of the herd with which she had stood; of the extension of the disease to a distillery stable across the street, and thence, by the sale of cows, all over Brooklyn. From that time to the present, it has prevailed constantly in Brooklyn, having been kept up by the continual changes among dairy stock, and by the mingling of different herds in summer, on the open commons around the city. The ancestry of this disease, in Brooklyn, can be as satisfactorily traced as that of any family in the English peerage, or that of any crowned house of Europe. The Yankee is no more surely the descendant of the original Puritan than is the lung plague of Brooklyn the descendant of the *Lungenseuche* of Germany.

But this is not what troubles us. The pestilence may devastate the stables of the New York and Long Island dairies at its own sweet will; it may spread over the State of New Jersey until the inspectors allege that in many counties no less than 20 per cent. are infected; it may ravage Eastern Pennsylvania, Delaware, Maryland, and Virginia, and may invade the District of Columbia itself—all this and much more may befall us; we may remain month after month, and year after year, in the most imminent danger of having the affection carried out to our Western plains, whence we could never eradicate it—this concerns us but little; but that England should for a moment suppose that we harbour such a disease, is a scandal and an outrage, and must be repudiated and denied with all possible vehemence. Our own veterinarians, who have studied the disease both here and in Europe, and who have acquainted themselves with its history on both continents, are to be silenced, that we may listen complacently to those who sit composedly at a respectful distance—at Toronto (Canada) and Edinburgh (Scotland)—and without personal examination of history, progress, symptoms, or lesions, pronounce oracularly that we "are not dealing with the contagious Pleuro-pneumonia of Europe." This action is altogether too much like that of the hunted ostrich, which buries her head in the sand in the vain hope of warding off her last-advancing fate.

I still cling to the hope that this plague has not penetrated the West—a hope supported by the entire absence of any contagious lung disease in Western cattle stopped fifty miles west of New York, as also by their constant soundness on their arrival at our Eastern stock yards, and until they have been long enough there to develop the disease. But I do not contradict the conclusions of Professors BROWN and DUGUID, and of the Principals of the Edinburgh and Glasgow Veterinary Colleges, when they state that they found contagious Pleuro-pneumonia among imported American stock. It is time enough to pronounce upon a disease when one has personally investigated it. Any reasonable man will admit that it is not impossible that there may be one or several centres of the lung plague in our Western States, or in Canada, whence some of the exported cattle were drawn. With the disease existing on our Eastern sea-board for thirty-six years, and affecting at different times, to my certain knowledge, high-class herds from which cattle were likely to be drafted for transport westward, it seems almost miraculous that it should not sooner have gained the Western States and spread widely. But besides this, there are various ways by which the "Ontario" cattle may have been infected. We have no assurance that this disease does not exist in Canada. A few years ago the *aphthous fever*, incomparably less insidious and less dangerous than the lung plague, was

exported from Great Britain to Canada, whence it spread widely over New York and New England. The importation and secret existence of the lung fever is a thousand-fold more probable.

But these are not the only possible channels for infection of the exported cattle. Who can assure us that infected cattle never entered the stock yards at Portland, Me.? Since the commencement of our work in New York, we have had cattle sent to Maine under *permit*. Did such an occurrence never take place before, and without any professional vigilance or control? Again, who can assure us that the "Ontario" never on any previous occasion carried cattle from any other port which infection was likely to reach? Who can demonstrate that the barge that carried the cattle to the Ontario had not become similarly infected? Who can certify that neither of these vessels ever carried infected hides or other animal products to or from England, or elsewhere? Who can tell whether the cars used for the transport of the cattle had ever carried infected cattle or hides? Who can deny that the attendants on these cattle in transit may have carried infection in their clothes?

Many American writers seem to lose sight of the fact that if it were established that the cattle on board the Ontario and Brazilian suffered from lung fever, it is far from being proved that this disease exists in our Western States. It would be ample ground, it is true, for a searching investigation through our Western herds, but no proof at all that these herds were really infected. But to return to the infected districts in the East. Any one who will consider for a moment, must see that the opinions of Professors WILLIAMS and SMITH, as to the nature of a disease they have never seen, and the descriptions of which have come to them only through newspaper paragraphs, are not worth the paper they are written upon. It must be evident to all, that men who will found their opinions on such a slender basis are very unfit objects of public confidence. Seeing Prof. SMITH is no further off than Toronto, and that he is so deeply interested in this disease, why did he not come to New York in person and satisfy himself as to the true nature of the malady, rather than hug his ignorance and publish an implied censure on the veterinary authority of New York, whose ability I do not for a moment believe that he doubts. By paying attention to what has been already published by the New York authorities, he could have ascertained the truth; but he has chosen to persistently shut his eyes and call for an experimental transmission of the disease by cohabitation, as if that were not seen and demonstrated every day, and on a larger scale, a thousand-fold, than could be done in a few experimental animals under the eye of an expert. For the sake of men who persistently avoid the light, I would never have lifted my pen, but for the sake of the many readers of the Journal who might otherwise be misled, I shall furnish a few examples illustrative of our daily experience with this disease.

Contagion from Cohabitation.

1*st*. By way of connecting the disease of to-day with that of 1843, I shall adduce an illustrative case, which began thirty years ago and continued for twenty years. In 1849, WM. MEAKIM, of Bushwick, L. I., kept a large dairy, and employed a man with a yoke of oxen in drawing grains from the New York and Brooklyn distilleries. A milkman on the way, who had lung fever in his herd, persuaded the man to use his oxen in drawing a dead cow out of his stable. Soon after, the oxen sickened and died; and the disease extending to his dairy cows, Mr. MEAKIM lost forty head in the short space of three months. The stables having thus become infected, Mr. M. continued to lose from six to ten cows yearly for the succeeding twenty years, or as long as he kept in the milk business. This brings the record down to 1869. It will be observed that this was the first occurrence of any such sickness in

Mr. MEAKIM'S herd; it commenced, not in the cows cooped up in hot buildings and heavily fed on swill, but in the oxen that were almost constantly in the open air, but which had been brought in contact with a dead and infecting cow; the infection of the cows followed, and for twenty long years no fresh cow could be brought into these stables with impunity.

2nd. The next case affords a most instructive contrast to the first, as showing how the disease which has been introduced into a place may be permanently eradicated by proper seclusion. In 1872, FRANK DEVINE, of Old Farm House Hotel, West Chester, purchased from a dealer a cow, which soon sickened and died. The disease extended to the rest of his herd, and in seven months he lost thirty-six cows. He appreciated the danger of contagion, and began again with new stock, keeping them rigidly apart from the infected beasts and premises, and from that time onward avoided all dealers and bred his own stock, with the happy result that in the last six years he has not had a single case of lung fever in his herd.

3rd. Twenty years ago, Mr. BENJAMIN ALBERTSON, Queens, Queens Co., L. I., purchased four cows out of a Herkimer County herd which had got belated and had been kept over night in a stable in Sixth Street, New York, where the cattle market then was. These cows sickened with lung fever, and infected his large herd of 100 head, 25 of which died in rapid succession, and 19 more slowly. He was left with but 60 head out of a herd, after purchase of the four, of 104 animals, and honorably declined to sell the survivors at high prices to his unsuspecting neighbours, but sold a number at half price to a Brooklyn milkman, who already had the disease in his herd, and knew all the circumstances.

4th. In the course of last year (1878), HENRY POST, Wheatley, Old Westbury, Queens Co., L. I., bought a cow out of a passing herd that had been brought by LEVY, a dealer, from Brooklyn stables. She infected his whole herd and his brother's to such an extent that they had to slaughter both herds, and, after a time, begin anew with fresh stock. From that time, as before, they have kept sound.

5th. Mrs. MURPHY, Brooklyn, last year bought a cow from MCCABE, a New York dealer, which infected all of her herd, so that she had to slaughter the whole and has given up the milk business.

6th. In January, 1879, Mr. JUDSON, Watertown, Conn. (and Park Hotel, New York), bought two cows of HECHT, a New York dealer. They took ill soon after, and infected his original herd of ten. All were placed in quarantine by the Connecticut authorities, but were smuggled off by HECHT (who had purchased them at a ridiculously low figure), and shipped to New York, where they were slaughtered by order of the authorities.

7th. Mrs. KELLY, Hazleton, Jamaica, L. I., bought a cow from a Williamsburgh dealer named BROWN, in the latter part of 1878. This cow sickened and died, and fatally infected the remaining three cows of her herd, so that she is now without any, and has resigned the milk business.

8th. Mr. W., Roslyn, L. I., late in 1878, bought two cows from a New York dealer. They sickened soon after, infected the rest of his herd, and six were lost before the plague could be stayed.

9th. Mr. K., Roslyn, was so satisfied it was not the lung fever that he purchased two of Mr. W.'s cows. One of these sickened and died, and infected several others of his herd, one of which had to be destroyed by order of the State authorities.

10th. Mr. M., Katonah, Westchester Co., in July, 1878, took in a Jersey cow sent from Motthaven as a present to his son-in-law. Three months later, his herd was generally infected, and the Jersey cow and two others died.

11th. The herd of M.'s sister-in-law, Mrs. R., which was kept across the

street, sickened in October, and, up to the time of my visit, early in March, five out of twelve had died.

12*th.* Mr. COLLINS, of 50th Street, New York, had a Jersey cow which suffered, in August, 1878, from some disease of the lungs that was denied to be the lung fever by the veterinarian who attended her. On September 20th her calf was sent to SOLOMON MEAD, Greenwich, Conn., who had agreed to keep it two years. The calf died two weeks after arrival, and infected ten of his herd ; five of which had died, and five were recovering, at the period of my visit (March 21st). The herd at that time numbered 13.

13*th.* Mr. GRIFFIN, Greenwich, Conn., occupied a farm alongside Mr. MEAD'S, and had his herd infected by a cow which broke out of MEAD'S herd and got, for a very short time, into his (GRIFFIN'S). At the time of my visit, Mr. G. had lost one, and had two in course of apparent recovery. As he was just over the Connecticut line, and out of the jurisdiction of New York, the sick had to be left, and the result has been that a number of his remaining herd of 26 have been infected since, and several have died.

14*th.* Mr. C., 146th Street, New York, had a cow sent on trial, last February, by GEISSMANN, a Yorkville dealer. She stood but one night in his stables ; was removed next day, because she looked bad, and another cow sent in her place. The last named cow still survives ; but three out of the five remaining cows contracted the lung fever, and when slaughtered by the State authorities, May 12th, showed most extensive disease of the lungs.

15*th.* Mr. T., 114th Street, New York, purchased a cow of KRAMER, a New York dealer, early in October, 1878. She took ill, and finally died, in February, 1879. At the time of our visit, May 14th, two other of his cows were suffering from the lung plague in a chronic form, and their destruction had to be ordered for the protection of the herd.

16*th.* About January 1st, 1879, ISAAC BILLARD, dealer, of Cutchogue, L. I., took a drove of 112 calves and yearlings from a place in New York City, to which we have traced a number of outbreaks. He sent them by cars to Bridgehampton, and sold them to farmers in the towns of Southampton and Easthampton. A month ago, a floating rumour of disease in these towns reached me ; but, on inquiry, its correctness was denied, and it was only recently that definite information could be obtained. May 6th to 8th, I visited these towns, in company with another member of the Veterinary Sanitary Staff, and condemned and ordered sixteen head, out of six herds into which calves of the Billard drove had been taken, to be slaughtered. Taking the first herd visited as an illustrative case : I. W., of Sagg, bought of BILLARD one bull calf, which sickened soon after, but apparently recovered, or, rather, as is too often the case, the disease subsided into a chronic form. This strange calf infected 13 more of his herd, five of which had died before our arrival, while nine, including the bull calf, were destroyed, and paid for by the State. In this case six of the condemned animals were supposed by their owner and his neighbours to be in good health, and it was only when they had been destroyed, and the extensive diseased changes in the lungs had been shown, that they became convinced that a serious blunder had not been committed. This is an every day experience with us, and illustrates how the disease is spread by cattle which an ordinary observer would consider to be perfectly sound.

These 16 cases of infection ought to be sufficient to convince any mind that is open to conviction that we are dealing with a disease which is eminently and most dangerously contagious. If anyone is still dissatisfied, I can add to the list to his heart's content. The reason why unobservant people fail at first to see that the lung fever is contagious, is, that the seeds of the disease lie so long dormant in the system. A beast purchased in October passes a bad winter, and dies in February, after having infected several others. She

had had a long *period of incubation*, and when the disease supervenes actively she has passed through a chronic form of the illness, so that, when others sicken people fail to connect the new cases with the infected purchase. Then again, in an ordinary herd of 10 or 20 head, the deaths do not follow in rapid succession, but at intervals of a fortnight, a month, or even more, and those unacquainted with the nature of the disease suppose that it cannot be infectious, or all would be prostrated at once.

Instances of mediate Contagion.

A. *Contagion through the Atmosphere.*—Some years ago, Professors SIMONDS and BROWN advanced the hypothesis that this disease could not be conveyed from animal to animal by *mediate contagion*, but that, in order to its transmission, the sick animal must be brought into direct contact with the healthy. It is difficult to see how such an absolute claim can be advanced in the face of the every-day observation that, when a sick animal is introduced into one end of a stable, the plague often skips many intervening ones to strike down a beast near the farthest end of the building. In such a case the air is the *medium* through which the virus is carried, and the contagion is unquestionably *mediate*.

The experiments conducted at the Brown Institution, in September, 1876, March, 1877, and August, 1878, by Dr. BURDON SANDERSON and Prof. DUGUID, in which healthy cattle were exposed to the emanations from diseased lungs without any ill result, are quoted as disproving contagion through the air. But one or several failures to convey a disease is no proof that the disease in question is not contagious. I might quote the example of the enthusiastic non-contagionists, who clothed themselves with the linen fresh from the bodies of cholera patients, lay with them in the same beds, and even drank their blood with impunity. The results did not prove that cholera was non-virulent, but only that they did not furnish the conditions necessary to induce contagion. We now know that if they had experimented with the bowel dejections of cholera patients, cholera would have been produced, in all susceptible subjects, on given days after their passage.

It seems highly probable that a flaw no less serious entered into the experiments conducted at the Brown Institution. If the emanations from the lungs of a sick animal can infect a healthy cow at the farther end of a long stable, there seems no good reason to conclude that the fresh lungs, warm from the sick beast, cannot give off emanations virulent to any susceptible animal. This question of the *susceptibility* of the healthy animals exposed is the first that suggests itself; and in the report of Dr. BURDON SANDERSON and Prof. DUGUID there is not a hint that this susceptibility had been tested. Had the animals that resisted exposure to the *diseased lungs* been afterwards infected by *contact* with *sick cattle*, the claim that the lungs could not convey the disease after their removal from the body, would have been rendered much more plausible. At present, the thousand cases of the conveyance of the virus through the air of a stable must be held as more authoritative than the three negative results from the diseased lungs at the Brown Institution.

B. *Contagion by Pulmonary Exudation introduced into the Nose.*—Prof. BALDWIN, of Glasnevin, informs me that, many years ago, he soaked a sponge in the liquid from a diseased lung and stuffed it into the nostril of a sound animal, which, in due time, showed all the symptoms of the lung fever.

C. *Contagion carried by Attendants.*—As this has been warmly debated on the other side of the Atlantic, I shall record two cases which ought of themselves to settle the question.

1*st*. In the winter of 1847-8, infected oxen were unwittingly purchased to

be fed on Pitcox, East Lothian, Scotland. The disease spread through the whole herd, causing most extensive losses. The cattle-man on the farm was the son of the farm steward on the neighbouring farm of Pleasants. The buildings on the two farms where the cattle were confined were about a mile and a half apart, and the Pitcox cattle-man came this distance weekly to pay a Sunday visit to his parents. On such visits he never failed to go in to see how his father's cow was doing. In the course of a few weeks the father's cow was noticed ailing, and from her the malady spread to all the cattle on the farm, entailing heavy losses on the owner.

2nd. In February, 1879, when we began the *stamping out* of the plague on Long Island, a gentleman of the name of DITMAS JEWEL took a great interest in the welfare of the suffering milkmen, and visited one or more of the worst-infected stables daily. He owned one favorite family cow, a Jersey, which was kept alone in a private stable, separated by ample grounds from all adjacent herds. She was never removed from these premises, nor were other cattle admitted, yet, towards the end of March, she sickened, and soon perished, presenting the most characteristic lung-plague lesions.

These two cases are conclusive, as in neither instance was there any possibility of *direct contact* with sick animals, while in both there was the *mediate contact* through the persons and clothes of the visitors.

D. *Contagion through the Infected Buildings.*—This form of contagion is so exceedingly common that an apology would be needed for referring to it were it not for the hardihood of some in denying all *mediate contagion.* Distillery stables, where the cattle of many owners mingle, soon become infected in infected localities, and from that time onward they remain infecting, though all sick animals are excluded. Dealers' stables suffer in a similar way; and thus, after a dealer has kept an infected animal in his place, he continues for months or years to disseminate cattle that infect others, though it may be impossible to find a sick beast on his premises at any time in the interval. One or two cases may, however, be particularized:

1st. JOHN MILLER, Farmingdale, L. I., traded with a Brooklyn dealer, January 1st, 1879, for a cow, which, soon after, fell ill and died. He shortly after purchased another cow, and placed her in the same stable, but she also sickened and died. After this, he placed a calf in the stable, but this also perished; and at present the stable remains unoccupied.

2nd. Mrs. P. G., 12th Street, Brooklyn, had two cows and one calf in her stable in the end of February, 1879. When visited, one cow was very sick, and her destruction was secured, the stable being afterwards washed with disinfectant liquids. The calf was disposed of for veal. Two months later Mrs. G. purchased a new cow from a man who had kept her as a family cow for some years, and put her in the same stable in which the first had stood. Ten days after, she showed symptoms of disease, and when slaughtered, showed the characteristic lesions of lung fever.

E. *Infection through the Manure.*—Mrs. P., Franklyn Avenue, Brooklyn, kept eight cows, and had made no purchase since the autumn of 1878. On March 26th, one of her cows was found to be affected with lung fever, and was killed in consequence. The only appreciable source of contagion was the manure, which had been drawn from infected city stables, and spread on a lot where these cows were turned out on fine days for exercise. In spite of the ploughing under the manure as soon as the frost would allow, three more of her cattle have sickened, and had to be killed May 12. As further evidence of the contagious nature of the affection in this case, Mr. K., her neighbour, who had visited and handled her first sick cow, has since lost one out of his herd of eleven, with unequivocal symptoms and lesions.

For the future I trust that we shall hear less of the scepticism as to the contagious nature of this disease. In the face of the above testimony, that stock

owner would be foolhardy indeed who would experiment on his own stock with this *contagium*. We need no experiment to establish the facts that the sun is warm, that flame burns, that snow chills, abundance of testimony is furnished to our hands. So also with the contagion of lung fever, the man who will come into a district where it prevails, and watch its progress from herd to herd, will find at every step evidence equally clear and irrefragable, without a resort to the slow, inconclusive, and dangerous method of experimental transmission by cohabitation. We no longer need any proof of contagion ; but we do need a short and speedy stamping out of the disease in every locality where it has gained a footing. All measures that hinder this, whether proposals for investigation, or the impossible but delusive proposition to examine all our cattle while in transit, can but work evil, and only evil, to our live-stock interests. JAMES LAW.

TRICHINOSIS IN SWINE.

SINCE the commencement of the VETERINARY JOURNAL, scarcely a month has passed without some reference to the parasitic disease of swine known as *Trichinosis* or *Trichiniasis*, and more especially with reference to its prevalence on the Continent. More recently, however, the existence of the disease in American swine has been alluded to, and unmistakable evidence of this fact has been furnished in the reports we published from Germany, where *trichinæ* were discovered in pork received from the United States. So long ago, also, as 1874, we devoted a section of our work on "Veterinary Sanitary Science and Police" (vol. ii., p. 482), to the subject, which is there exhaustively treated ; and we mentioned that outbreaks of *Trichinosis* were far from infrequent in America—one being prevalent when the work was in course of publication. The great importance of the subject, so far as the public health is concerned, and our anxiety that some measures should be adopted to prevent people being infected in this country, mainly prompted us to give it so much notice. We were cognisant of the fact that *Trichinosis* in pigs was rapidly extending in the United States—from two per cent. in 1868 to eight per cent. in 1878 in Chicago ; and also that every year the importation of live pigs, as well as their products in the shape of ham, bacon, and pork, was immensely on the increase, while no attention whatever was paid to the sanitary condition of these on their arrival in this country ; so that consumers of these articles were exposed to great danger. Finding that the authorities were either ignorant, incredulous, or indifferent with regard to the existence of *trichinæ* in American pigs, we went beyond the range of this Journal, and addressed ourselves to other influential organs, to one of which—the *Lancet*, for February 22nd—we wrote the following article, which appeared as a sub-editorial :—

"TRICHINÆ IN AMERICAN PIGS.

"A FEW months ago the discovery was made in Germany that *trichinæ* existed in considerable numbers in specimens of bacon and pork, selected from some imported from the United States of America ; and as a pretty large trade had sprung up in these commodities, and was rapidly on the increase, the announcement caused considerable alarm and disappointment in some of the German towns. When the intelligence reached America, it was received with real or simulated incredulity by those chiefly concerned in the rearing of pigs and the exportation of their carcases, and in more than one agricultural periodical, as well as in other journals devoted to the food export business, the truth of the statement was indignantly denied, and it was strenuously asserted that the muscle-worm was unknown in America, just as it had

been maintained on the other side of the Atlantic that contagious Pleuro-pneumonia was not present among the cattle there. And this in presence of the fact that outbreaks of *Trichinosis* had been recorded as occurring in the human species on that Continent—notably a serious manifestation of the malady in 1874,—and that, eight years previously, a committee of the Chicago Academy of Sciences had investigated the disease in the pig. These outbreaks were either ignored or overlooked in the States, and it would seem as if they were unknown in Europe, for we have never looked with any suspicion on the hams and bacon arriving in this country ; while so many grave epidemics had taken place in Germany among people who had eaten the flesh of pigs infected with the entozoon, and precautions in the way of inspection and cooking had to be so carefully observed with regard to the products of the native animal, that supplies from America, which was believed did not require these troublesome observances, were hailed with satisfaction. But the fact has been clearly demonstrated, that American pork is even more infected than that of Germany, according to the statements of German investigators, and it should put us on our guard. It has been stated in this country and America that the muscle-worm does not cause any disturbance of the health of the animals whose bodies are infected with it. But this is not always so, though it is true that in some experiments, in which creatures were fed upon trichonised flesh there was no perceptible inconvenience manifested. And Atwood and Belfield fed a white rat, then three weeks old, on trichinous pork, a liberal supply of which was given from every infected sample. Nevertheless, the creature grew rapidly, and seemed to enjoy the best of health, his excellent condition being a subject of remark ; yet when killed, his muscles—from the tip of the nose to the end of the tail—were literally alive with *trichinæ*, from ten to thirteen appearing in every field of the microscope. But if we refer to Fleming's 'Veterinary Sanitary Science and Police' (vol. ii., page 491, note), we shall find that the most serious symptoms, and even death, have been produced in pigs by experimental feeding with trichinous flesh. The symptoms varied, of course, with the degree of infection, but in the graver cases they were due at first to the intestinal irritation, and at a later period to the muscular inflammation. The first is denoted by the diminution or suspension of the appetite (though this is rare), vomiting, distention of the abdomen, manifestations of colic, more or less severe, and diarrhœa, which sometimes persists for weeks. There is dulness—the animals are inclined to lie a good deal and to hide themselves beneath the litter ; and, if standing, the back is arched and the tail pendant. Fever is present, the pulse is quickened, the body varies in temperature, and there is great debility. The symptoms ensue towards the end of the first or commencement of the second week after ingestion of the trichinous pork, and, with the exception of the diarrhœa, they disappear after lasting from six to eight days—if death does not occur within that time, as sometimes happens with very young pigs, or those which are older and have received a very large quantity of the entozoa. Sometimes death takes place from peritonitis, consequent on perforation of the intestine by a great number of the worms simultaneously ; and in other cases there is a peculiar form of enteritis with the ejection of false membranes per annum. When the muscular symptoms appear the intestinal disturbance becomes less marked, but the fever increases in intensity. The pig is often lying, and in walking it carries the back raised, and the limbs are stiff and painful ; opening the mouth, mastication, and deglutition are difficult ; the voice is harsh, husky, and weak ; the respiration loud and laboured ; cutaneous œdema appears in different parts, together with intense pruritus, and emaciation rapidly sets in. If death does not take place the symptoms gradually subside, and it is only in very debilitated animals that convalescence is slow.

We have been induced to notice these symptoms in the pig as we are not aware that they are recognised as indicative of *Trichinosis* in that animal; indeed, there is reason to believe that neither pigs nor pork are suspected of infection, and many animals may die annually of the malady without the cause being defined. There can scarcely be a doubt that the porcine race in the three kingdoms is just as likely to harbour *trichinæ* as on the Continent, or in America, though they are never looked for, or even dreamt of as being present in swine's flesh. This is a sanitary question of no mean importance, and one which should receive immediate attention; for in the country in which the *trichinæ* were first discovered in the human body, there is good foundation for believing that they are far from rare, and that people may suffer from their effects and their disease be ascribed to other causes. The resemblance of the symptoms of *Trichinosis* in human beings to those of other, but widely different, maladies, may, we think, occasion an erroneous diagnosis. If it is admitted or proved that trichinous pork is consumed as food in this country, then we can see no just cause for doubting the occurrence of the disease in man, when we know how cooking is sometimes performed, and also that in some counties, as in Yorkshire and Lancashire, the lower classes (navvies, farm-labourers, and the like) are peculiarly addicted to the consumption of raw pork. At any rate, after what we know as to the percentage of infected pigs in Chicago, and other parts of America, and the abundant supply we receive from our cousins of live and dead porkers, as well as the suspicion that our own swine may not be much freer from such troublesome and repulsive vermin, it is as well to be on the look-out, and ascertain what our risks really are."

This article was written in February last, and yet nothing was done to ascertain to what extent *Trichinosis* prevailed, either in imported or home-grown swine's flesh; and it will be seen from the Parliamentary intelligence reported in our last issue, that so late as May 8th the Government was ignorant of the existence of the disease. Who is responsible for this state of affairs we know not, but it is certainly most discreditable, and shows, in the strongest light, the miserable position of Veterinary Sanitary Science in this country. Germany, in 1877, had discovered 343 cases of trichinotic infection in imported American bacon and pork, while 138 people had been affected with *Trichinosis;* and in 1878, of 35,510 American hams inspected at Hamburg alone, 297 were infected, with 85 sides of bacon out of 14,000. *Trichinæ* had also been found in American hams carried from Liverpool to Germany; and so great was the consequent alarm that Italy, Greece, and some other countries altogether interdicted the importation of swine or their products from the United States. Surely something of all this should have been known to our Government! There cannot be a doubt that at any time during the last ten, twelve, or more years, *trichinæ* would have been discovered in American pigs brought to this country, had search been made for them; and the alarm on the Continent in recent times might, at least, have aroused suspicion.

We are not surprised that our contemporary, for June, should only now begin to learn something of the matter; though its information is derived *more especially* from "agricultural papers" of "the last few weeks." Neither are we at all astonished when it states that "the question of American pigs being the bearers of *trichinæ* remains still to be determined," as sanitary or scientific information is, unfortunately, not one of its characteristics; and its unconsciousness of very much of what has been going on for years in the domain of medical science, may largely account for the government neglect of *Trichinosis*, as well as other maladies which have caused the nation great injury, and the loss of millions of pounds. Twelve years ago, the existence of *trichinæ* in American swine was "determined," not by our experts, certainly, but by the Americans themselves; and from the

answer given by the Lord President of the Privy Council in the House of Lords, on May 29th (see Parliamentary Proceedings in this month's *Journal*), the question has at last been "determined" at Liverpool, though not by our contemporary. The incident is not at all of a novel character, for reference to the history of Veterinary Medicine in this country for the last forty years, will show that incredulity, non-determination, and unacquaintance with what we may term the science of Veterinary Medicine generally, have been predominant, and this has not only done us irreparable damage, but has made us the laughing stock of other countries.

To prove that American swine are the bearers of *trichinæ* to a far more serious extent, even, than the pigs in Germany, we have much pleasure in presenting our readers with the following report, already referred to, which we have had in type for some six months, but could not find room for, in consequence of the demands on our space. It will be seen that there is nothing more to "determine" with regard to this subject,though it would be well to "determine" the question as to whether our contemporary can lay any claim to represent the veterinary profession in such a matter. We may well experience a feeling of shame and regret that such things should still have to be commented upon, in these terms, in connection with Veterinary Sanitary Science in England—but so it is.

Last autumn, the Health Commissioner DeWolf, of Chicago, directed his attention to the question of *trichinæ* in pork, and decided to have the subject investigated, with a view, if possible, of reaching some means whereby they could be readily detected by the meat inspectors of the city, and the consumption of the flesh stopped. He accordingly addressed the following letter to the gentlemen named therein :—

"Office Health Department, Chicago, September 15th, 1878.

"Messrs. H. F. Atwood and W. F. Belfield, M.D.

"Gentlemen,—I am doing what I can, with the means at my command, to detect and consign to the rendering vats all meats exposed for sale or designed for our markets which are unfit for food. More than 200,000 pounds have thus been disposed of to date the present year.

"I am anxious regarding the question of *trichinæ* in pork, because of the peculiar difficulty of their detection by the unaided eye of our inspectors. Will it be possible for you to make for me a scientific and authoritative examination of the question whether our pork supply is affected with this parasite? or to what extent? If an examination can be made, I will see to it that the material is on hand whenever wanted ; and, if *trichinæ* are found will you please favour me with a report covering the following points :

"To what extent are these parasites dangerous to health or life?

"Are trichinous animals generally out of health?

"Can reliance be placed upon thorough salting or smoking of meat as destructive of *trichinæ?*

"Are there any practical means by which our meat inspectors can detect the parasite in a carcase of meat?

"Such an account of the natural history of the parasite as will instruct the public?

"I am, gentlemen, very respectfully, your obedient servant,

"Oscar C. DeWolf, M.D., Commissioner of Health."

Dr. Atwood is vice-president of the State Microscopical Society, and Dr. Belfield demonstrator of anatomy in Rush Medical College and assistant pathologist of the county hospital. These gentlemen, so eminently fitted for the consideration of the subject in its microscopical and anatomical phases, undertook the task, and have been engaged upon it ever since. The result

of their work is the following interesting and instructive report, which has just been completed :—

"Oscar C. DeWolf, M.D., Commissioner of Health.

"Dear Sir,—In compliance with your request, we have made a series of careful examinations of pork with reference to *trichinæ*, and have the honour to submit the following report : The samples have been brought to us each day by Officer Lamb, of your force, to whom our thanks are due for his punctuality. He has procured specimens of pork from each of the packing and slaughtering establishments in the city, and at the stockyards. In accordance with our instructions, he took from each hog two pieces, one from the tender-loin (psoas muscle), the other from the ham. We have examined each evening samples from two and sometimes three animals, our method being as follows :—Thin longitudinal sections were cut from the muscle, and immediately transferred to the live-box, either in water, glycerine, or a mixture of water, glycerine and acetic acid. They were then examined on a Bulloch binocular instrument, with Bauch and Lamb three-quarter inch objective and A oculars, giving an amplification of about seventy-five diameters. Most of the sections were examined by each of us independently ; hence we feel reasonably confident that no *trichinæ* escaped our observation. From the one hundred hogs, we examined nineteen hundred and twenty-seven sections, or nearly twenty from each hog.

"We had intended examining upward of one thousand animals, but on account of your urgent request for an early report, and because the average of infected ones was so uniform, we have consented to give the results arrived at on the first five hundred.

"Eight of the one hundred hogs were infected, the ninth, twenty-fifth, twenty-ninth, fifty-third, fifty-fourth, sixty-third, seventy-sixth, and ninetieth hogs containing *trichinæ*. Some were badly infected, while in others comparatively few parasites were found. In all cases the hams were apparently free from *trichinæ*, those we found being always contained in the psoas muscles. In the twenty-ninth hog we found the smallest number, there being not more than thirty-five to the cubic inch, while the specimen from the ninetieth hog contained, by a careful estimate, not less than thirteen thousand in the same bulk.

"In reply to your question as to whether trichinous hogs are generally out of health, we would say that nothing in our observations or study would prompt us to answer in the affirmative. It is the normal condition of an animal to harbour one or more varieties of parasites. Van Beneden states, in his work on 'Animal Parasites and Messmates'—speaking of parasites in general : 'They are not more abundant in delicate individuals than in those who enjoy the most robust health. On the contrary, all wild animals harbour their parasitical worms, and the greater part of them have not lived long in captivity before nematode and cestode worms completely disappear.' Moreover, to satisfy ourselves and to demonstrate other facts, we commenced at an early stage in our work to feed trichinous pork to a white rat, then three weeks old. He received a liberal supply of this pabulum from every sample that we found infected. The animal grew rapidly and always enjoyed the best of health : his excellent condition being a subject of remark by visitors at our laboratory. On November 17th, we killed the animal, whose muscles were found to be literally alive with *trichinæ*, from ten to thirteen appearing in every field. Every muscle was infected from the tip of his nose to the end of his tail. This, we think, answers your question in the negative.

"You ask, 'Are there any practical means by which our meat inspectors can detect the parasite in a carcase of meat?' We would reply that the microscope is the only infallible means. To the unaided eye the infected

meat presents no peculiar appearance, unless the parasites be present in excessive numbers. The German government has for some years made a microscopic examination of pork a necessary preliminary to its exposure for sale. The parasite is not destroyed by thorough salting and smoking, as is evidenced by the fact that most of the cases of *Trichinosis* in the western country are traceable to raw smoked hams. To ascertain whether or not an infected ham could be rendered harmless, we instituted a series of experiments in the physiological laboratory of Rush Medical College. As a result of these we found that in sulphurous acid we have an agent which not only instantly kills the worms, but readily permeates the entire ham, and is as readily expelled. Owing to the cheapness of this article, the addition of a sufficient quantity of it to the pickle would add but a trifle to the expense of curing.

"In view of the results of our investigations, several important questions suggest themselves. First, why is the percentage of infected hogs so much greater than it was eight years ago? At that time a committee of the Chicago Academy of Sciences examined a large number of hogs, and found but two per cent. infected. We are unable at present to offer any satisfactory solution of this question. Second, why is the percentage of infected hogs so much greater here than in Germany? Englebrecht states (*Anleitung zur untersuchung der geschlachteten schweine auf trichinen*) that of 618,236 hogs examined between October, 1866, and April, 1873, but 70 were found to contain *trichinæ*. These examinations were made by government officials in the Duchy of Brunswick. We are unable to explain the greater prevalence of the parasite in America, but are at present conducting experiments which we hope may lead to a solution of this problem.

"The third and practically most important query is this: Since eight per cent. of our hogs are trichinous, why are cases of *Trichinosis* so rare? We would advance three propositions: First, that in most instances the meat is previously subjected to thorough cooking, whereby the worms are killed. Second, that in consequence of the close resemblance of the symptoms of *Trichinosis* to those induced by other causes, notably Typhoid Fever, is it not probable that in some instances it has been mistaken for other complaints? Third, that the ingestion of a certain number of living *trichinæ* is followed by no unpleasant results. In proof of this, we adduce the case of the white rat above described, whose carcase, weighing, when dressed, one ounce, contained not less than one hundred thousand worms. Moreover, in cases where an entire family has partaken of trichinous pork, while some members have experienced serious, perhaps even fatal, illness, others have escaped with little or no indisposition. So firm was our confidence in the harmlessness of a few *trichinæ*, that one of us (Dr. Belfield) ate, on November 20th, a portion of the rat referred to, which was demonstrated under the microscope to contain twelve living *trichinæ*. At this date no unusual symptoms have resulted from his oriental diet.

"That the prevalence of *trichinæ* in the human family is more extensive than is generally supposed, is proven by the researches of Turner, Wagner, Virchow, and others (as stated by Ziemssen). These observers found that from two to three per cent. of all bodies examined, in which there was no suspicion of the presence of the parasite, contained *trichinæ*. This, too, was in Europe, where the worm was of less frequent occurrence than in this country. Indeed, there seems to be no limit to the number of *trichinæ* that a man may sustain with impunity; for in numerous instances the bodies of patients, never suspected of having suffered from *Trichinosis*, have been found, *post mortem*, to contain enormous numbers of these worms. Doubtless, in these cases *trichinæ* were ingested at several different periods, only a comparatively small number having been swallowed on any single occasion.

"With regard to the natural history of the parasite, we would briefly state the following facts: The presence of the worm in the hog is ascribed by most authorities on the subject, to infected rats which he may have devoured. This belief we are not inclined to accept, though we are not as yet in possession of sufficient data for sustaining our theory. Wherever the parasite originates, it usually enters the human stomach encapsulated in pork.

"Its condition is then analogous to the pupa state of the insecta. The cyst consists of a connective tissue envelope enclosing mineral matter, which consists largely of phosphate and carbonate of calcium. This is not unlike an egg-shell, except that the connective tissue is external, while in the egg the integument is internal to the calcareous matter. Contact with gastric juice causes the disintegration of the cyst, the pepsin digesting the connective tissue, the free acid decomposing the calcareous salts. To ascertain the time required for this process, we procured some juice from the stomach of a dog by means of a gastric fistula. Thin sections were placed in a live box, covered with this fluid, and a temperature of 100 degrees maintained. The worms were observed to escape in from twenty to forty minutes. These worms do no other harm than the infliction of their progeny, which is effected within eight days, each female producing a brood variously estimated from 300 to 1,200. The adult parasites are soon thereafter ejected with the fæces. The young *trichina* shortly after birth forces his way through the intestinal wall and seeks the voluntary muscles, increasing in size as he progresses. Continuing his course, he passes between the muscle fibres, until, arriving at his future home, he pierces its sheath and coils himself up in the fibre. Then follow the phenomena usually occasioned by the presence of a foreign body. The irritation causes multiplication of nuclei, absorption of the formed material, with subsequent fatty, and finally calcareous, degeneration. Meanwhile, the proliferation of cells results in the formation of a connective tissue envelope. The animal is thus enclosed in a living tomb, which he never leaves, unless liberated by the gastric juice of another animal. In this condition he remains unchanged for an indefinite time, stated by certain authorities to be sometimes as much as twenty years.

"In concluding our report, it may not be amiss to emphasise the necessity of thorough cooking of pork as a preparation for the table, since the parasite is killed at a temperature far below that of boiling water. It is far from our intent and desire to be classed among the alarmists, as is evidenced by the statement of our belief in the comparative harmlessness of the parasite—an opinion at variance with that usually expressed by previous writers on the subject. These investigations have been conducted in a truly scientific spirit, and we state our results as they actually occurred."

THE HORSE-SICKNESS OF SOUTH AFRICA.

Two quantities of blood from horses dying or dead from "Horse-sickness" in Natal, have, through the kindness of the Principal Veterinary Surgeon, been recently forwarded to us for examination and experiment. The first instalment was sent by Mr. Duck, Royal Artillery, but it was much decomposed, and we could not detect any *Bacilli anthracis*, nothing except putrefaction Bacteria and swarms of Micrococci. Guinea pigs were inoculated, but without result. The second quantity was obtained from a horse at Durban, by Mr. Glover, Royal Artillery. It was a mixture of the blood with aqueous humour from sheep's eyes, but it also unfortunately was undergoing decomposition. Like the first quantity, it contained only the ordinary Bacteria of putrefaction, myriads of Micrococci, and a few non-motile, very small rod-shaped Bacteria. An extremely minute filaria was found in one of the portions examined; but this was in all probability

derived from the sheep's eyes, as it was the only specimen discovered. The results of inoculation with the blood were rather doubtful. If our friends in South Africa will kindly fill some small glass tubes with some of this blood, should they have the opportunity, and hermetically seal them at once, forwarding them at their convenience, we shall esteem it a favour. Small portions of lung containing one or more bronchules, and preserved in equal parts of alcohol and water, will also be most useful.

The horses sent from this country to Natal are reported as in excellent health and condition—only three per cent. being on the sick list; the cases of Horse-sickness appear to have been very few, and now that the winter has set in the dreaded malady should not be apprehended for some months. The following report, addressed by Dr. Atherstone to His Excellency the Lieutenant-General Commanding the forces in Natal, has been published, with a supplementary observation, in an Order issued at Pietermaritzburg, February, 1879.

"Having made many post-mortems on horses which have died from the effects of the disease commonly known as 'horse-sickness' in this colony, I consider it to be a specific fever, the result of a specific poison given off by the grass—as that of 'hay fever' is—when in certain stages of decomposition. These disease germs, when inhaled by the animal, give rise to inflammation of the lungs and heart, and prove rapidly fatal. Frost stops the disease at once; and localities of a certain elevation have been found to be safe from attack. Exposure to night air, or the still moist air of hollows, is sure to produce it. It is worst and earliest in wet weather, and in summer and spring when vegetation is rapid. Stabled horses never get it, unless their hay has been exposed to the night dew, and thus filled with disease germs; or unless they have been exposed to the night air in affected localities. During the epidemic of 1871-2 I rode with my son through the Sunday's River district, where almost every horse had died from it, in order to test the correctness of my ideas on this subject. We provided ourselves with large flannel nosebags, and attaching them by an indiarubber band to the halter, we left our horses tied to a waggon or tree during the night, fully exposed to the effects of the night air. When the sun was up we took them off. After a fortnight's trial in places where the farmer had lost every horse he possessed from the effects of the epidemic, we returned without either of our horses having been affected. The flannel had filtered the night air, laden with the germs of disease, and our horses remained in perfect health. The best mode of treatment for horses attacked by the epidemic is to employ ammonia, and blistering with the juice of the euphorbia and boiling water, both easily procurable, with supporting diet; in fact, the same treatment as for 'typhoid pneumonia.' The Lieutenant-General Commanding, on the above testimony, considers it desirable to direct that, with a view to prevent horses suffering from the effects of night air, nosebags should be continually worn from sunset to sunrise."

We may mention that four cases of the disease have occurred in the 17th Lancers, one in the Transport, and one on the Lower Tugela. Five cases of Glanders are reported as having appeared among the Colonial Transport horses.

The Ontario transport ship recently carried 420 mules from New York to Natal, a very long voyage, and only lost eleven. They were in charge of Veterinary Surgeon Burt, Royal Artillery.

SUPPRESSION OF HÆMORRHAGE AFTER CASTRATION.

It sometimes happens that after castration of horses by the actual cautery, as well as by other means, there is more or less hæmorrhage from the

spermatic artery, no matter how skilfully or carefully the operation may have been performed; and as this hæmorrhage, if not injurious to any serious degree, is at any rate alarming to non-professional observers, it is prudent to suppress it without delay. It appears from the trial recorded in our last issue, that some members of the profession object to plugging the canal leading from the scrotum to the inguinal ring, on the score of danger, while others have not heard of this device. On several occasions we have been compelled to resort to it, and it has proved eminently successful, and never been followed by any ill effects. We have simply pushed a mass of fine tow, steeped in cold water, as high as possible up the cavity, where it was retained without any stitches in the scrotum. When this has not checked the bleeding, we have applied a folded horse-rug, saturated with cold water, across the loins for a few minutes. This acts as if by magic. The tow plug may be gently removed in an hour or two. This mode of suppressing hæmorrhage is so safe and effective that we can confidently recommend it; though we think that bleeding, and some other troublesome consequences of castration, would be obviated if the *écraseur* were alone employed for the removal of the testicle after the vas deferens and tunica reflexa are divided by sharp scissors.

THE MORTALITY AMONG CAMELS IN AFGHANISTAN.

It is an extraordinary circumstance that the land transport service of the British Army should prove such a serious subject in every war we undertake, and cause, if not the defeat of our troops, at least a world of anxiety and embarrassment, as well as prove a most costly branch of the service. In post-prandial orations we are accustomed to the assertion that our troops can go anywhere, and do anything. That they can fight as stoutly and stubbornly as the most valiant warriors of past or present times no one dare gainsay, but that they can go anywhere may well be doubted, after what has transpired in Afghanistan, and what we now witness in Zululand. The mobility of troops appears to be lost sight of, and our military authorities seem to limit their attention to the smallest part of a soldier's work—fighting. Our notions of moving troops on land and keeping them supplied with the requirements for campaigning are hazy in the extreme; and it is only, as a rule, when an army is put in the field that the question of transport crops up. Then immense sums of money have to be disbursed in the purchase of transport animals and equipment, both very frequently of the most inferior quality and at a maximum price; men and officers who know little, if anything, of the management or care of the creatures entrusted to them, are drawn from regiments, chiefly infantry, and in the hurry-scurry of organizing the most essential requisites are ignored or forgotten. Our military talent certainly does not do much for us in the matter of transport organization, and it is greatly to be apprehended that if we were involved in a war of any magnitude, and especially with a European power, our deficiency in this direction would prove of far greater moment than it has done in the recent petty campaigns, which have so fully demonstrated our incapacity to learn useful lessons from former disasters.

Nothing more lamentable occurs to our memory at this moment than the grievous mortality among the transport animals of the army divisions in Afghanistan; a mortality which might, from all accounts, have been largely avoided if only reasonably common-sense precautions had been adopted, and for which the Indian Veterinary Department certainly cannot be held responsible, as we believe it urged the adoption of these precautions, and yet saw the immense congregation of valuable and most expensive animals move off towards Afghanistan without even one Veterinary Surgeon to advise as to their management, or minister to their injuries or maladies. The consequences we have already referred to, and we have no desire at present to enter into

the additional painful and disgusting details which have since come to hand The enormous losses are exciting much attention, and a *Times* telegram from Simla, of June 8th, thus alludes to them :—"The statement that 16,000 camels had been lost may be correct with regard to a portion of our forces, but at least twice this number have perished altogether, without counting other baggage animals. One estimate which ought to be trustworthy makes the total number nearly 40,000. It is earnestly to be hoped that the successful termination of the campaign may not prevent fullest inquiries into the causes of mismanagement so discreditable and dangerous. The Khyber force was for some time so helpless, owing to the want of transport, that it could not have advanced to Cabul if Yakoob Khan had defied us." We sincerely trust that independent authorities will institute a searching investigation into this disgraceful affair ; for it is only by such inquiry that one of the most discreditable and dangerous defects in our military system can be remedied. If inquiry is made it will be clearly shown that at least a large proportion of the mortality was due to the advice of the Indian Veterinary authorities not being accepted.

THE FITZWYGRAM PRIZES.

THESE prizes which were open to all students who graduated at the Royal College of Veterinary Surgeons during 1878-79, were recently competed for with the following result :—

E. Simpson Shave, Royal Veterinary College, London, First Prize—£50.

T. Herbert Lewis, New Veterinary College, Edinburgh, Second Prize—£30.

W. Frank Smith, Royal Veterinary College, London, Third Prize—£20.

Reviews.

THE FOUR BOVINE SCOURGES: PLEURO-PNEUMONIA, FOOT-AND-MOUTH DISEASE, CATTLE PLAGUE, TUBERCLE. By Thomas Walley, M.R.C.V.S., Edinburgh. Maclachlan and Stewart. 1879.

It gives us much pleasure to welcome Professor Walley's praiseworthy monograph on four of the more serious bovine scourges known to Veterinary Surgeons in these islands. It is undoubtedly one of the best professional books on the subject, as distinguished from the popular "Cow-doctor" series, this century has produced, and reflects great credit on not only the author, but also on the publishers for their enterprise. The book, though it may be read with benefit by the more intelligent class of agriculturists, is essentially a work for members of the profession, and to them we can honestly recommend it. Pretty well everything that is known in this country with regard to the above-mentioned disorders is embodied in the author's descriptions ; while from the large amount of original observation incorporated with them, the methodical arrangement, and the not too technical language, as well as the very excellent plates (nearly all of them coloured), the busy practitioner, no less than the Veterinary student, has at hand an excellent manual for easy reference. There is ample scope for the reviewer, and we feel inclined to criticise freely, and also, we are glad to say, favourably ; but want of space forbids us doing more than merely alluding to two or three points, hoping our readers will patronise the work, which is really worthy of all the commendation we can bestow upon it.

The best parts of the monograph, in our opinion, are decidedly those which treat of the pathological anatomy of the four diseases; and the illustrative plates are an excellent supplement to the verbal descriptions. In Zymotic Pleuro-pneumonia, Professor Walley is almost entirely at variance with Dr. Yeo, whose report we published some months ago; and he certainly has some reason to complain—as have others—of the manner in which the Doctor treated his remarks on this malady, contributed to the VETERINARY JOURNAL in 1876. Professor Walley is no supporter of the notion that the disease can only be transmitted by the breath of the living animal; and he gives a formidable array of witnesses in support of his opposition. With regard to the efficacy of inoculation, he gives a halting opinion; but possibly, when his manuscript went to the press, the inoculation method practised by Mr. Rutherford in and around Edinburgh, had not then yielded the startling results we chronicle elsewhere. The subject of Foot-and-Mouth disease is almost exhaustively treated, and forms a very interesting section. Cattle plague is a scourge we fortunately do not see every day, but a knowledge of it is, nevertheless, very important. Professor Walley does not carry its history in this country beyond 1745, but a reference to "Animal Plagues" will show that there were probably several invasions of the terrible contagion before that period.

The section on Scrofula is one of much importance, and though it does not contain the latest observations, yet it deserves the attention of Veterinary Surgeons. Professor Walley, in common with all those who have studied the subject, denies that Tubercle is due to the absorption of broken-up matter.

There is an appendix to the work, on the inspection of live animals and of meat, which will be found of service to abbatoir inspectors and others, as well as a postscript on Zymotic Pleuro-pneumonia in American cattle, giving strong evidence in favour of oxen from the United States imported into this country being affected with this disease. The subject has been already referred to in the JOURNAL.

In this hasty notice of Professor Walley's *magnum opus*, we feel that we have not done it sufficient justice, inasmuch as we have not made long quotations from it to show its excellencies. But we can exonerate ourselves to some extent from qualms of conscience, by asserting that the book deserves well of the profession; it is the work of a close observer, enlightened pathologist, and an honest, steady labourer in progressive Veterinary science.

Proceedings of Veterinary Medical Societies, etc.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on April 9th, 1879. W. A. Taylor, Esq., Vice-President, in the chair, in the absence of the President, W. Dacre, Esq., who was unable to attend in consequence of severe indisposition. The following persons were present:—Messrs. P. Taylor, W. A. Taylor, T. Hopkin, E. Faulkner, M. J. Roberts, J. B. Wolstenholme, Jas. Paton, of Manchester; Messrs. R.

Reynolds and D. Hutcheon, of Liverpool; J. B. Taylor, of Ashton; — Bunnell, of Oldham; W. Woods, Wigan; W. Whittle, of Worsley; A. Darwell, of Northwich; H. Beard, of Macclesfield; — Pallin, Esq., 20th Hussars; T. Briggs, of Bury; Dr. Henry Briggs, of Liverpool; and the Secretary. Letters of excuse were received from Messrs. Professor Pritchard and McCall, J. Welsby, E. Sudren, Geo. Morgan, J. O. Martin, C. E. Elam, E. Woolner, and W. Dacre.

The minutes of the last meeting were read and confirmed, after which Mr. P. Taylor proposed for election as a member of the Association, Mr. J. B. Wolstenholme, of Manchester; seconded by Mr. S. Locke, and carried unanimously. Mr. Whittle proposed Mr. J. O. Martin, of Manchester; seconded by Mr. P. Taylor, and carried unanimously. Mr. Woods proposed Mr. H. Thompson, of Aspatria, Cumberland, as a member; seconded by Mr. W. A. Taylor, and carried unanimously. Mr. S. Locke proposed Mr. F. R. Ridler, The Mall, London, which was seconded by Mr. W. A. Taylor, and carried unanimously.

The SECRETARY then read the Report of the Fleming Testimonial Committee. There were twenty-nine subscribers, the total amount subscribed being £63 10s. 6d.

Mr. T. HOPKIN then read an interesting paper on "Antisepticity." He said:—Gentlemen,—We have latterly been so favoured with lectures and papers from professors and others learned in our art, that when one of the multitude takes the place of essayist, unless he is possessed of an unlimited amount of assurance, must feel no little trepidation.

This vaunted nineteenth century of electricity and accelerated locomotion has divided and subdivided all branches of science in such a manner, that the general practitioner finds it no light task to master the true theories and facts that the scientific specialist is from day to day supplying him with, and engaged, as we are, with multifarious duties of our active calling, it cannot be expected that we should undertake the solution of abstruse problems; but after the specialist has by careful research and experiment ascertained certain facts tending to unravel the laws of nature that have up to that time been mysterious and secret, it is clearly a part of our duty to apply them in such a manner that an enhanced success should follow the adaptation, and thus be able so to advance our profession by battling more successfully with disease and its sequel. The object of this paper will be to call your attention to investigations that have been latterly directed to the way in which "Antisepticity" may be successfully applied to surgery. It will be taken for granted that the old ideas of our forefathers, that all they required was a certain number of receipts or nostrums to be applied in a case as the best or only thing requisite for the successful practising of our profession, has exploded, and that any light thrown on the working of Nature's laws, any unravelling of her mysteries, will be received as priceless knowledge—such knowledge being power.

If we take, as an example, the discovery of the circulation of the blood by Harvey, and contemplate the amount of labour that must necessarily have attended the experiments, the painstaking research, the careful noting of facts, that discovery entailed on the memorable and honoured discoverer; and, on the other hand, the boon it has been to mankind, you will see that Harvey did a work of far greater magnitude than a generation of ordinary practitioners—his discovery must remain a monument to him for ages, whilst the others glide away with scarce a memento left to mark their existence. To the most casual observer it must be patent in thousands of ways, the intimate relation existing between cause and effect; but modern science and her appliances teaches, as it does, the infinity of the infinitely little requires both perseverance and intellect to follow her. A man may fracture a limb

by falling: be he possessed of the slightest power of reason, he will easily recognize the fact that the fall was the cause, and the fracture the result; but it will require the educated scientist to recognize the causes and effects of many of the complicated processes that will have to come into operation before it terminates in resolution, or one or other of the more unfortunate terminations following the solution of continuity in the osseous system; and whilst the intimate relation existing between cause and effect can be ascertained and demonstrated by experimental research in branch of science dealing with the inanimate, there are some facts in connection with ours that humanity forbids the some prodigality of experiment; and whilst some amount of vivisection is undoubtedly justifiable, we forget that any new fact noted and proven in the daily clime is a step towards the solution of some mystery, and it is to be feared that often when we stumble across those gems by not noticing them, they drift back into the dark sea of the unknown. Abundant proof is to hand, that for centuries man has been aware of the fact that certain diseases could be conveyed from one system to another in some mysterious way, but without the slightest idea save and except such as they obtained by conjecture as to what this potent but baneful agent could be that carried death and disease over the land. During the last twenty years Pasteur's researches, with regard to the processes of fermentation and putrefaction, have given rise to what is commonly known as the germ theory of disease. It is not necessary to discuss the question *in extenso* as to whether all our infectious diseases are due to germs, but I wish you to note carefully the similarity in the action of fermentation and some diseases. This is beautifully illustrated by experiments conducted by Dr. Roberts, of Manchester. In one he filled two pint bottles with saccharine wine, and inserted a delicate thermometer in each. A. was inoculated with a minute quantity of yeast, but nothing was added to B. Both bottles were placed in a warm room 70° F.

In order to get a correct standard for temperature, another bottle C, with thermometer, was placed beside them. The bottles were carefully swathed in cotton wadding to obviate the change in temperature as much as possible. For twelve hours no change took place, but at the end of this time A began to ferment with rise of temperature. On the second day it was actively fermenting, and its temperature was 2·7 degrees above B and C. This disturbance continued for five days, the temperature ranging from two to three degrees above the companion bottles. The disturbance then subsided, and the temperature fell to an equality with B and C, and the sediment of yeast settled at the bottom. In the meanwhile B showed little alteration, but fermentation set in on the sixth day, following a similar course to A.

Dr. Roberts says this fever in a bottle resembled small-pox in the following points—inoculation period, incubation, disturbance and elevation of temperature, succeeded by a subsidence of the disturbance and a return to the normal state, multiplication of the infective material, and after conclusion liquid protected from infection by same contagium. Second part shows fermentation can be produced either by direct inoculation or fortuitous infection through the atmosphere. The comparison fails, however, in one point—a chemical change takes place in one and not the other. Sugar is changed into alcohol and carbonic acid; whilst, so far as we know, no chemical change takes place in the blood and tissues in small-pox. Putrefaction and certain diseased action are even more intimately allied than fermentation and fever.

I have in this bottle a small aquarium of my own cultivating. A piece of fresh muscle was placed in a jar, and after being covered with water it was allowed to stand exposed in a warm atmosphere for several days. Upon examining a drop of this liquid under the microscope I find that there are thousands of living, moving specks visible—these are termed "bacteria."

We have here induced the process of putrefaction, one of the essentials to which is the presence of bacteria. You say, How do we know that? Because it can easily be proved that if you prevent bacteria or their germs entering the liquid, no putrefaction takes place. I have here two tubes which, after filling with wine, we boiled so as to kill any bacteria there may be in them, and then cover one with cotton wool and leave the other exposed, placing them in a suitable temperature, you will find that the one in which the air that comes in contact with it has been filtered through cotton wool, no change has taken place ; in the other, the process of putrefaction is going on. And, as must be patent to any one examining them, this proves several things. Firstly, that the organic matter has no inherent power of generating bacteria. Secondly, matter has no inherent power of passing into decomposition. Thirdly, that bacteria are the actual agents of decomposition. Many far more elaborate and conclusive experiments have been performed to prove these facts, but I will only just briefly allude to them. Turnip-water—two specimens that were kept for over two years. Ozone was passed through one and the air filtered : it remained *in statu quo ;* whilst the other was green, thick, and very offensive.

Professor Tyndall has proved that air, optically pure, will not produce bacteria. When a ray of sun or other concentrated light is passed through a bottle containing filtered air, nothing is visible; whilst the ordinary atmosphere contains particles of dust which reflect the light and give a beautiful luminous track. I say, Professor Tyndall has proved that when air is in this state, organic matter does not putrefy ; but only introduce a drop of water or anything that has been in contact with the atmosphere, and the processes commence at once. You who have seen what minute things bacteria are, will at once conclude how difficult it is to detect the germs that produce them. What has already been said pretty clearly proves that they are due to germs and not to spontaneous origin. Two facts, however, came to light that almost upset this. The first is that bacteria are invariably killed when exposed to a temperature of 140° Fahrenheit or any higher temperature. The other fact is that certain liquids as neutralized—nay, infusion and milk often produce bacteria after being boiled—sometimes after several hours boiling, and where there was no possibility of subsequent injection. This looked like spontaneous generation. Professor Cohn, of Breslau, has, however, thrown some light on the mystery. He found that whilst 140° Fahrenheit might kill the parent, the germ or spore was not affected by a very much higher temperature. Mr. Dallinger and Dr. Drysdale have also demonstrated that whilst certain living monads were killed at 140° Fahrenheit, the spores, which are so minute that they cannot be detected by the highest power of the microscope, except in masses, are capable of germinating after being subjected to a heat of 300° Fahrenheit for ten minutes. One of these experimentalists most graphically describes the minuteness of these objects. He says they cannot be called, for an object is a thing of which we can take cognizance by some of our senses aided or unaided, and that germs lie so completely beyond the powers of our present instruments that their existence is for the present a matter of inference and not of direct observation.

Although at present beyond our ken, we can say, "By their fruits ye shall know them." For the purpose I have in view it will be necessary for me to prove the connection between bacteria and a septic state of the system, as seen in Septicemia, to which I shall refer presently.

Burdon Sanderson, after killing healthy rabbits, immediately took some internal organ, as liver or kidney, and plunged it in fused paraffin at 230 degrees, and, after allowing the mass to solidify, covered it with Venice turpentine to prevent any air getting to it through the cracks that were apt to

form in its cooling. After several days, on cutting into it, the outer portions were cooked with the hot oil or paraffin; temperature had been sufficient to coagulate abumen, but an internal kernel was red, proving that the temperature here had not been sufficient to coagulate albumen, and upon examination was found to swarm with fine active bacteria; and the conclusion he is forced to is that either bacteria or germs were present in the organ, and that whilst it was healthy. The blood of animals, when due care is taken in extracting it so as not to permit of its being infected from without, does not normally contain either bacteria or their germs. That they can readily enter the animal system by mucous membrane of bowels, lacteals, and pulmonary mucous membrane, there is no doubt. After elaborately arguing the matter, he comes to the conclusion either that the bacteria are formed and are immediately afterwards destroyed, or that they are not allowed to germinate. Whilst we have abundant proof, on the one hand, that the normal blood does not contain bacteria, we have also proof, on the other hand, that in peritoneal and pleural effusions in rodents, however produced, it invariably happens that the exudation liquids contain swarms of bacteria.

By the term Septicemia is meant the aggregate of the effects which are produced in the animal organism when putrid matter is mixed with the blood stream. Artificially, this can be readily produced in the dog, and is analogous in the course it runs, and the symptoms to which it gives rise to the fatal Septicemia of our hospitals, commonly called hospital fever. There are many reasons why our patients do not suffer so frequently from this disorder as man. But that it has been the cause of death (although overlooked at the time) to numbers of our patients, I shall be able to prove clearly—I believe before the close. Dr. Burdon Sanderson, in one of his lectures, "On the Infective Processes of Disease," speaking of Septicemia, says:—"Inasmuch as we cannot be certain in any case of chemical Septicemia that the symptoms or *post-mortem* results are exclusively due to sceptic contamination, it is clearly necessary to take the experimental facts rather than the clinical as our starting point." After detailing many of the experiments on this subject by continental authorities, he takes the symptoms as exhibited by a dog after septic matter has been injected, and compares them with the symptoms as found in this disease in man; shows the analogy of these and *post-mortem* appearances as well. He then goes on and proves clearly that although septic matter does not necessarily contain bacteria, *yet it cannot be produced without their agency.*

His reasons for coming to this conclusion are best given in his own words: —"So far as our present knowledge reaches, none of the known chemical products of the putrefactive disintegration of albuminous compounds can be indicated as the cause of the toxic action of putric infusions; for in respect to each of them we have experimental evidence that, when separately introduced into the organism in such quantity as would correspond to a poisonous dose of the septic liquid of which it is a constituent, it produces no toxic effect whatever. The inference is therefore suggested that the poison is not any product of the septic disintegration of proteid bodies, but a something which is much more intimately associated than any of them are with the existence and growth of the ferment organisms themselves."

This inference has been fully justified by experiment. It has been shown by Professor Bergmann that the septic poison can be produced by the action of bacteria on material which contains no albuminous compound. He found —and we are now familiar with the fact by repeated experiments—that if you grow bacteria in the cultivating liquid to which I previously referred, of which the composition is given in the table, the first crop of bacteria is inert; but, eventually, you obtain a product which possesses all the virulence of putrescent animal or vegetable infusions, notwithstanding that the original liquid contained only sugar, ammonic, tartrate, and certain inorganic salts.

Let us endeavour to realise what happens. We have to begin with, virtually, a solution of ammonic tartrate; for it can be shown that it is all that is wanted at the outset. Into that solution you introduce at one side, say a bit of glass, which has not been calcined, and of which the surface is consequently contaminated, *i.e.*, beset with germinative particles. The vegetation takes its start from the surface of the glass. One after another bacteria emerge into existence and visibility, and multiply with a rapidity which you can easily calculate on the datum that each becomes two within about an hour after its birth.

Having our bacterium, how does it manufacture its virus?

In order to obtain an answer to this question, I will ask your attention to the following experimental results, which, irrespectively of their bearing on the present question, are of value for the additional evidence they afford of the fundamental proposition of this lecture, viz., that Septicemia is not due to the direct action of living bacteria on the blood and tissues:—

Some years ago Dr. Hiller, one of the most energetic and able opponents of the germ theory, made an experiment which has been the subject of much discussion. Having succeeded in collecting a considerable mass of bacterial material, that is of bacteria obtained from various fluids in advanced putrefaction, on a filter, he washed the mass, just as one washes a precipitate, a great number of times, and injected it in repeated doses into the circulating blood of animals. The injections were entirely without effect. Hiller next proceeded to inoculate himself with the same material, and again without effect. The advocates of bacteria at once objected to Hiller's experiment, that the bacteria not being accustomed to distilled water were so injured by the repeated washings that they had lost their activity. The criticism, however, might just as well have been spared, for it afforded Hiller the opportunity of proving by experiment, which was of course easy enough, that the washed bacteria were as lively and as capable of development as ever.

But there is another way in which inactive bacterial liquid can be prepared, a way to which I have already adverted. In any cultivation of bacteria in a nutrient solution, the first crop (if I may use the expression) is always inert. It is not until the bacteria have gone on for many days dividing and dividing that they begin to develop their poisonous properties, at all events in appreciable quantity. This can scarcely mean anything else than that the mode of vegetation changes, viz., that the bacteria first formed have their place taken by others of which the form and the physiological endowments are different. Every one who is familiar with the growth of bacteria in cultivating liquids knows that there is a marked difference in appearance between the first and subsequent growths, the former consisting mostly of rods (bacteria proper), which appear early; the latter of spheroids or micrococci. They differ not only in form, but also in the fact, that whereas the rods are endowed with great mobility and appear to act independently, as if each had a consciousness of its own; the latter are held together in masses by transparent interstitial substance (glæa), and usually form a scum or pellicle on the surface of the liquid. The meaning of these facts seems to be this. It is obvious that in every liquid in which successive generations of organisms grow in the way I have described, each generation must alter the composition of the liquid; and that this change may consist not merely in the discharge into the liquid from the bodies of such organisms of the "waste products" of their vital processes, but also (in case any of the earlier generations instead of continuing to live are disintegrated) of the products of such disintegration; so that, in the latter case, it is quite possible that a liquid which was at first non-albuminous may, as the process goes on, contain an appreciable quantity of proteid matter. That any such formations of plasma actually takes place cannot be asserted. All that we know on observation is

that the later generations differ as regards their morphological characteristics from the earlier, and that they alone possess toxic properties ; so the two processes must go on side by side—a change in the composition of the liquid, and a corresponding change of the organisms which grow in it.

Experiment has proved that if the exudation of simple peritonitis be injected fresh into the peritoneum of another animal, the disease assumes a more intense form in the second than the first, and if by artificial selection the most severe cases be taken, and the exudate from that case be used for further transmission, a still more intense inflammation will be the result.

When either nature or circumstances causes this course to be followed, we get what may be termed "malignant" peritonitis. It will readily be seen from what has already been stated, that when you have a number of cases in which the process of putrefaction is in operation, that you will be likely to get the formation of *septic* matter. Now do we find this to be the case? The answer to this query must be in the affirmative. We know perfectly well that the high rate of mortality in the surgical hospitals is produced by Septicemia, and the army surgeons tell us in their records of practice, during active service, that the thing most to be dreaded is Septicemia—a greater percentage of the wounded dying from this rather than from the severity of their wounds, and that if once established nothing could be more disastrous. Why our patients do not suffer to the same extent may be attributed to several causes. Those of you possessing a knowledge of comparative pathology will bear me out when I state there is not the same tendency to Septicemia in herbivorous animals as the omnivorous and carnivorous. Experiments prove that in some liquids bacteria do not thrive as well as others, nor produce the septic poison ; but whether the septic matter is not so abundantly formed, or whether when formed circumstances do not favour its absorption in the majority of our cases, we have not absolute proof, but there is indirect proof sufficient, I feel satisfied, to lead us to conclude that both these surmises are correct. We know that the discharges, many of them, swarm with bacteria, but there does not appear to be the septic poison, or at any rate its toxic effects are not made visible, either from absence or non-absorption.

(*To be continued.*)

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE fifty-ninth quarterly meeting of this Association was held at the Medical Institute, on May 9th, 1879. WILLIAM WHITTLE, Esq., Vice-President, in the chair.

There were present—Messrs. Elam, Moore, Morgan, Wilson, Reynolds, William Leather, Stevenson, and Chisnall, of Liverpool ; H. Barnes, Malpas, Roughsedge, St. Helen's ; M. Barron, Sutton ; Woods, Wigan ; Storrar, jun., Chester ; and the Secretary. Letters of apology were received from Professors Williams, Walley, Pritchard, and Axe ; Messrs. Hopkins, J. and A. Lawson, G. R. Dudgeon, D. Dudgeon, A. H. Darwell, J. B. Wolstenholme, T. Taylor, Sam. Locke, H. J. Cartwright, and J. Welsby. The minutes of the previous meeting were read and confirmed.

Mr. WILLIAM LEATHER then exhibited the brain of a horse, of which he gave the following description :—

"The animal was a grey cart gelding, eight years of age, in moderate condition ; had been at work in Liverpool about twelve months. He was at his usual work on the 22nd of last December, and was brought to the infirmary on the 23rd. *Symptoms*—Pulse 50, of medium strength ; respirations normal ; temp. 103° F. A swelling in the right orbit, which completely closed the eye ; the left eye was natural. On approaching him from the

right side, he would turn away as if afraid of its being touched. I carefully examined for some external mark, but failed to discover any. His appetite was moderately good.

24*th.* Symptoms unaltered.

25th. I observed a discharge of a thick fœtid character from his right nostril. There was also an increased secretion of saliva, which is seen to accompany sore throat, but he evinced no difficulty in swallowing.

26*th.* Pulse 62, and weaker. Temp. 104° ; appetite deminished.

27*th.* Pulse and temperature unaltered, but on being approached from either side he would suddenly wheel round and appear unsteady for a few minutes. The discharge from the nostril had ceased.

28*th.* Pulse 45, temp. 103°. Unsteadiness increased. Could be made to move with difficulty, and ate carrots and green food when handed to him.

29*th.* Pulse 45, temp. 103°. Extreme weakness. He fell down in the afternoon, and died the same night.

Autopsy.—The thoracic and abdominal viscera were healthy. On removing the surrounding tissues of the right orbit, and reaching the parts adjacent to the orbital and maxillary hiati, they presented a greenish colour, and were mixed with fœtid pus ; the divisions of the fifth pair, or trifacial nerves, which pass through the foramina of the hiati, were also extensively diseased. On dissecting out the brain, I found it highly congested, and an abscess containing about two ounces of pus situated on the right side, and at the base of the cerebrum at its junction with the cerebellum." In reply to a question, he (Mr. Leather) said that the pus was not contained in a sac, nor had the animal any appearance of strangles.

A conversational discussion followed, in which most of the members present joined, the principle points touched upon being the origin of the abscess, and whether it was caused by an external injury, the result of extravasated blood, or was related to strangles.

Mr. BARNES then communicated the notes of a case of disease of the brain of a horse :—" The subject was a cart gelding, three years of age. He was put to light work—gave every satisfaction—but always evinced a dislike to have his head touched. He was turned out to grass the following summer (1878), and a few weeks afterwards he was observed to have a difficulty in depressing his head, and to be falling away in condition. I was then requested to see him, and on examination found a large, hard, fluctuating swelling on the off side of the cervix. After the application of hot fomentations and a blister for nearly a week, I lanced this swelling, and gave exit to a large quantity of pus ; and, on further examining the wound, I found it deep-seated, and the tissues involved completely destroyed. I had the wound well syringed out and dressed daily. Under this treatment it continued to improve, and the horse was discharged in October. A very slight discharge still issued from the wound, but this I anticipated would gradually cease.

" On the 30th January, 1879, the horse was put to draw a load of corn to the railway station, a distance of two miles ; but when about half the journey had been completed, he was observed to stagger, and immediately began to perspire freely. After standing for a few minutes, however, he apparently recovered, and proceeded with the load, completing the journey, although manifesting signs of drowsiness and disinclination to travel. On arriving home, his owner observed him to be very stiff in turning, hanging his head, and appearing sleepy.

" He then administered a stimulant, consisting of a quart of warm ale and a little ginger, and afterwards gave him a dose of physic. There appeared to be little improvement, and three days after I was requested to see him.

" I found him with his nose in the manger and his head pressed against the rack ; eyelids half closed ; lips pendulous ; pulse and respirations slow ; and

partial paralysis of the whole body. On elevating his head for the uprpose of giving him a draught, he became greatly excited, reeled, and feel backwards.

"*Treatment.*—I abstracted about five to six quarts of blood, administered a dose of physic, placed him in a comfortable loose box, clothed his body well, and ordered cold cloths to be applied to his head constantly. The following day the bowels were relaxed, but the animal was unconscious—holding his head to the right side, and turning round in the same direction. He remained in this condition for five days, and on the sixth he was found down, struggling violently, and steaming with perspiration. I advised the owner to have him destroyed.

"*Autopsy.*—I found the right hemisphere of the cerebrum enlarged, and containing about two ounces of pus." In reply to a question, he said that the abscess was not in the substance of the brain, nor did it appear to be contained in a sac.

Mr. BARNES also exhibited a specimen of Ostitis, with a deposit of new bony matter on the sixth and seventh cervical vertebræ, of which the following are the notes: "The subject was a grey mare, five years old. I was called to examine her on the 8th of February. I found her lame in the off-fore leg, accompanied with atrophy of the *antea* and *postea spinati* muscles of the same shoulder. This, I concluded, was the result of a sprain.

"*Treatment.*—Rest; hot fomentations, followed by gentle stimulation; which was continued for a fortnight with satisfactory results. The following week she lost her appetite, and exhibited symptoms of stiffness in the neck, accompanied with general wasting of the cervical muscles. On manipulating the inferior portion of the cervical vertebræ, the animal evinced great pain. I ordered hot fomentations and stimulating embrocation to be applied daily, accompanied with the internal administration of vegetable tonics. This treatment I continued for a fortnight, with no beneficial results, when I informed the owner that I anticipated an unfavourable termination, and asked to be allowed to have a professional gentleman in consultation. Mr. Cartwright, of Wolverhampton, was called in on the 4th of March, and after a careful examination together, we came to the conclusion that the atrophy of the muscles was the result of concussion to the cervical vertebræ. And, on inquiry, we ascertained that, about a month previous to my *first* visit, she had broken loose whilst out at exercise, and was supposed to have leaped or fallen over some iron hurdles. A fresh sheepskin was applied to the neck for twenty-four hours, after which a strong embrocation was rubbed over the whole of the neck, and vegetable and mineral tonics were given internally, but with no improvement.

"On the 26th of March she was found down, and unable to rise. The following day I recommended her to be killed.

"*Autopsy.*—On stripping the skin from the neck, I observed the muscles of the inferior cervical region to be of a peculiar greenish colour, and on cutting down to the bone, a small quantity of a greenish looking pus made its appearance, which convinced me that extensive disease of the bone was present. On examining the two vertebræ involved, you observe that the deposit of bony matter extends within the neural canal, as well as upon the outer surface of the bones; and I would like the opinion of the members on the following peculiarities of this case, viz.—(1) The length of time between the supposed cause of the injury, and the first symptoms of lameness; (2) Why was there not immediate stiffness of the neck, with excessive pain? and (3) Why should the muscles of the shoulder be the first to become atrophied?"

An interesting discussion followed, and the general opinion expressed was that the original cause of the diseased condition had been a shock inflicted

on the bones of the neck, setting up inflammatory action ; and as this inflammation, from the appearance of the deposit, seemed to have commenced within the neural canal, and to have extended outwards, it was considered that the nerves distributed to the shoulder had become involved in the diseased condition, previous to its being so extensive as to affect the contiguous muscles of the part. Thus accounting for the interval between the injury and the shoulder lameness, and also for the shoulder lameness preceding the stiffness in the neck itself.

Mr. ELAM exhibited the top of a large iron rail, weighing several pounds, which he had extracted from the abdominal cavity of a cow, and of which the following are the notes :—"The cow, in trying to leap over the railing, got impaled on the top of one, and the parties in attendance being unable to get her off, procured a hammer and broke off the head of the rail, leaving it enclosed in the abdominal cavity. I was not made aware of this on my arrival to see the cow, and not until I had carefully returned the bowels which protruded, and had stitched up the wound, was I told that there was a lump of iron inside.

"I then undid the stitches, and by careful manipulation succeeded in extracting this massive cone-shaped rail-head which you see. It, fortunately, had a very obtuse apex, and, consequently, had not penetrated the bowels. I then re-stitched the wound, fastened a truss on the part, had the animal kept quiet, gave sloppy diet, and a little aconite to allay the excitement during the early stages. In about a week a small abscess formed ; this I opened, and in three weeks the cow was well."

Mr. ELAM also exhibited a specimen of *Mollities Ossium*, in a five-year-old pony. The part shown was the head ; but the whole of the bones of the body were similarly affected. The pony was the property of Mr. Hengler, and had been used by him in the circus for carrying performing monkeys, but he did not know anything further concerning its history.

A discussion as to the cause and pathology of this diseased condition followed, but no very definite conclusion was arrived at.

A vote of thanks to Messrs. Leather, Barnes, and Elam for their contributions was carried unanimously.

The Secretary nominated Mr. T. E. J. Lloyd, of Liverpool, for election as a member of the Association.

A vote of thanks to the Vice-President terminated the meeting.

DUNCAN HUTCHEON, *Hon. Sec.*

THE LONDON VETERINARY SURGEONS *VERSUS* THE ROYAL VETERINARY COLLEGE.

A LARGELY attended meeting of Veterinary Surgeons was held on June 5th, to consider the question of fees pertaining to Veterinary practice, and especially the system of competition maintained at the Royal Veterinary College. In the unavoidable absence of Mr. COLEMAN, Mr. R. WARD, F.R.C.V.S., was called to the chair.

The CHAIRMAN said:—I think you are aware that the object of this meeting is to take into consideration the effect of the competitive fees of the Royal Veterinary College on the Metropolitan practitioners. I will ask Mr. T. Moore, the convener of the meeting, to explain the origin and object of it, after which we will open a discussion on the subject.

MR. T. MOORE: This meeting is the outcome of some correspondence published in the VETERINARY JOURNAL for November and December of last year. In considering, first of all, the fees pertaining to Veterinary practice, I am of opinion they are very inadequate, especially that for examining horses as to soundness, knowing that if by chance we overlook some defect,

we may be held liable to the extent of a hundred pounds or more. I am of opinion the fee should be regulated in proportion to the liability, and on some percentage scale, as in many other professions; for instance, if you take the opinion of an architect regarding a house of the value of £100, you would be charged £5. As you are all aware from the advertisements of the Royal Veterinary College, for a sum of two guineas per annum the professors examine twenty horses, and for five guineas an unlimited number, also any number of horses may be sent there for treatment by paying only for their keep. I ask you which of us can afford to do that and pay the rents and expenses we have to do now-a-days? Supposing one of us offered to treat a horse on these terms, would it be considered honest? Would it not be said he intended to recoup himself in some other way? I hold in my hand a copy of the "Bye-Laws and Regulations referring to Subscribers of the Royal Veterinary College," published this year. It details the privileges accorded to the subscribers, and on p. 15, bye-law 8, provides, that "The professors are not to examine horses as to soundness out of the College, nor visit sick animals (otherwise than in the course of investigating any such outbreak as aforesaid), except by special permission of the Principal, and then only with the object of their removal to the infirmary for treatment, if this be found convenient and safe." You are all aware that the first part of this bye-law is totally disregarded, and the latter part inflicts great hardship upon us. This also applies to Regulation No. 6, p. 28 (if we regard the professors as servants), which says, "No servant of the College shall, under any pretence whatever, accept of any present."

In 1791, when the Veterinary College was established, there was nothing of the kind existing—in fact, I may say the Veterinary profession did not exist. The school was started by a Frenchman named Sainbel, who, to obtain the funds necessary for his scheme, inaugurated the two guinea subscription, and we may fairly conclude that the contributors to the fund acted from purely *charitable* motives. There is not now any necessity for an exhibition or continuance of charity; for the College must have a considerable reserve fund, and a large annual income, derived principally from students' fees, which of late years have been increased one-third without any proportionate disbursements. I may mention here that the Royal Agricultural Society of England, numbering over 7,000, have the same privileges as the subscribers to the College, without any payment, beyond the annual payment to the Society of one guinea. A little interesting information may be culled from the book I have here, but there is not sufficient data to make it reliable. The College has been fortunate in getting legacies to the amount of £982. The life subscriptions for the last forty years amount to £1,554, which is invested, and the accrued interest must be very handsome by this time.

The annual subscribers number 1,028, paying annually £2,158, or so. The new annual subscribers in 1878 numbered 191, and the sum paid by life subscribers during the past ten years exceeded by £130 the amount derived from that source during the whole of the thirty years previous. Taking students into consideration, the annual income of the College cannot, I fancy, be far short of £10,000. Financial statements of the College are kept rigidly secret, although the public has a right to know something on this point, considering a Parliamentary grant was made some years ago, and no account rendered as to what became of it. I hardly think the financial part has anything to do with us; it only shows we are considerable losers; but, for all that, I for one am glad to see the College has prospered so well, and hope it will continue.

Among the list of subscribers, I find the names of thirty-five London horse-dealers, who send a large number of horses to be examined, and sell them according to the certificates, and of course to the detriment of the Veterinary surgeons practising outside. There are eight names of what may be

called "gentleman dealers," including some of the large job masters. Also the name of one farrier who practices as a "Veterinary Surgeon," and with whom one, at least, of the professors goes out in consultation. I note that one of the subscribers is described as an "Esquire," but I know him to be a coachman. (Laughter).

It is asserted that the subscriptions are necessary to obtain subjects for the practical education of the student. This is throwing dust in the eyes of the public. In the Scotch schools no such system exists, and no one can say the graduates of those schools are less practical than the London ones. It is obvious that practice is necessary for the professors, but is there any reason why they should obtain it on terms which place their brethren at a disadvantage?

I have been told that as the Royal Veterinary College is a private speculation, we are not likely to succeed in our attempts at reformation; but I think we might try and see what we can do.

Mr. GASKIN: I quite agree with the last speaker that a guinea fee is inadequate for the examination of a horse as to soundness; but I believe it would be impossible to bring the fee to a fixed rate of five, or two-and-a-half, per cent. on purchase money; I think a fee of two guineas would only be adequate remuneration for the labour and responsibility of examining a horse. With regard to the professors examining horses outside the College, I think a resolution censuring them for so doing might go a long way in remedying it.

Mr. CATTRALL: It gives me great pleasure to attend this meeting, and I may say that to some extent I have had a deal of experience within the College walls, and taken a prominent part there for years.

I must confess it seems to me there are many difficulties attendant upon bringing this issue to such a position as will satisfy ourselves, and make the whole condition uniform; I should have been glad if Mr. Moore could have pointed out some road to relieve us of that difficulty. One thing is certain, we must have a great deal of confidence in each other, and whatever we do we must do it with a full determination; if we intend to make any objection to what is carried out within the walls of the College, we must do it so that afterwards we should not be ashamed of it. (Hear, hear). If any gentleman can supplement, or assist me in supporting, my remarks in that direction, I, for one, will be glad to act. I must confess that in endeavouring to make a suggestion, I should be also making a leap in the dark. I think so far as the uniformity of the examination as to soundness fee is concerned, that we are in a better position than formerly, and we have no right to expect more than a guinea, which I consider a fair fee; and it carries with it a professional status.

Professional jealousy seems to be hereditary among us; why, I cannot say, for I am sure that every gentleman who is connected with our profession need not be ashamed of it. With regard to liability for errors in examining, I think that, although it may be law, it only applies to a specified condition, and I shall be glad to be corrected. We must all feel some regard for the College, having obtained our diplomas there; but things are done there which I regret. I agree with Mr. Moore about taking so many horses; I think if there were a better state of harmony brought about it would be better for all of us. (Hear, hear.)

Mr. ROGERS: I have been in the profession for some years, and it is the first time I have heard we were liable for damages in giving a wrong opinion in examining horses. As to the other matters, it appears to me the remedy is simple. Go to the College, point out the abuses and the remedies we propose, and hear what they say. I say this—the subscriptions ought to be done away with. I know they do a deal of harm; I only had one client who

subscribed to the College, and I won't have another. I say it ought to be put a stop to, and the sooner the better. (Hear, hear.) I intended at one time to put on my bill-heads, "No business done with subscribers to the College."

Mr. J. MOORE: There can be no doubt whatever that we are liable for damages in case of error in examining horses as to soundness. A short time ago a veterinary surgeon certified a horse to be five years old, when it was only four. The case was tried at Leeds, and he was mulcted in damages. Quite lately a member in London compromised a case rather than go into court, and he is nearly £100 out of pocket. I do not think there is any escape from liability. Doctors are liable for negligence to their patients, cases having been decided over and over again; so why not veterinary surgeons? Regarding the College, I thing it is time something was done to remedy the existing abuses, and bring about an amicable feeling amongst the members of the profession in London. I do not think it was ever intended that the professors should practice so much out of doors. It is not at all elevating to the profession. You will all remember the case of Mr. Paradise, and how Professor Pritchard gave evidence against him, although he acknowledged he had never seen a case of the kind. (Cries of shame.) No doubt the jury gave a verdict on the strength of the "professor" title, thinking a professor could not make a mistake. Was that like what a professor's conduct should be?

Mr. T. S. PRICE: I think the liability for neglect in examining a horse would depend on the way the certificate was worded. I should think this would answer:—"I have this day examined, and *do not detect*," &c.

The CHAIRMAN: If you go into a court of law you must give a definite answer. You will be asked, was that horse sound or unsound? did you try to detect. A certificate to be valuable should also be definite.

Mr. J. ROWE said he had the misfortune to reside near the College, being just within half-an-hour's walk, and without hesitation would say there was not a "Veterinary Surgeon" in London, within two or three miles radius, of even twelve months' practice, who had not some complaint against the College fees and its working. (Hear, hear.) Competition being so great in these days, practitioners must accept some work, or see it go begging—that meant for it to go to the farriers. In the case of subscribers whose horses he shod for years, he had not received a sou, and why? Simply because in the list of subscribers there were twenty-seven names of his clients. They ask him, "Will you shoe my horse for five shillings? I subscribe to the College, and can get him done for that sum there." He asked six, and they said they would send their horses to the College; and he accepted the lesser rate rather than they should do so, and hoped for the chance of professional service, as so many reside in his immediate district. As he could not compete at two guineas for twenty horses, he shod for the five shillings to keep the College out of it, which he would not do with a practitioner. (Hear, hear.) He was summoned some three or four months ago to attend a horse at 7 a.m. He found the animal very ill, and attended again two hours later, when he was told, "You need not come any more, I have sent to the College." The horse was there some seven weeks. He, Mr. Rowe, was accustomed to such cases, many horses he shod were first examined and afterwards treated there, and he had almost ceased to complain about it. He thought that the fees the College charged was only "a draw" to pay them in another way. Until lately he thought the two guineas paid for everything but keep, now he understood operations and medicines supplied were extra; the horse goes to the College, and remains there a long time, not infrequently six or seven weeks. (Voices, months.) Could we keep our cases for that period? (No.) Notwithstanding all this he always bore the College good-will, for it sometimes cures the subscriber's faith, and then he employs an outsider on the

next occasion, who invariably does his utmost to get the horse well as soon as possible ; for a long standing case is detrimental to him. He agreed with Mr. Rogers that we should address the Governors ; we required a little more support and acknowledgment at their hands. The question resolved itself into this, "Who will bell the cat?" The guinea examining fee has been objected to as too small—in the West end it is a paltry remuneration for examining an animal valued at £200 and upwards ; but he very much doubted if we should get it raised, as there was great difficulty in getting that, and he had been refused it, because it was to be done elsewhere for ten shillings and sixpence, and for two shillings and three halfpence (at the Royal Veterinary College). We must therefore crack nuts with our friends outside before and while we go to the College. He knew we were liable for incorrect examinings, etc., and could enumerate three instances. By putting the notice on the bill-head or forge wall you do not evade the law, but may blind the customer. The law was law.

Mr. ROGERS : I have a law on my bill-head.

Mr. ROWE : No, sir. To those gentlemen doubtful on this point, I would say by all means join the Mutual Benevolent and Defence Society ; if you are in error you have a number of gentlemen ready to come forward and testify to your error. Then you must pay and have done with it ; or, if in the right, to carry you through it. With your indulgence I will also state that the College has this week woke up to this meeting, or a sense of their false position, in treating the opulent and needy alike in their "fees"—"*save the mark!*" It has on the entrance gate a piece of paper posted up, to the effect "that anybody not overstocked with this world's goods, attending there on certain days between two and four, may have advice for nothing, and medicines for one shilling." I think this an attempt to compete with the chemist, and is so far good that it may also afford some practice to the pharmacy students within.

I trust I may not be accused of personality, for I intend none ; and for the professors I have the highest respect, numbering personal friends among them. I consider that their position outside the walls of the college should be purely as "consultants," for which there is ample scope ; that their attendance at the Law Courts in town, and the four quarters of this country, now so general with them, is prejudicial to the best interests of the profession, and good feeling among its members; and they should only be sought as referees in very important cases involving grave consequences, as otherwise the title they bear of "Professor," is calculated to carry the day in favour of the fortunate side retaining them. On another occasion I hope to add further. The matter requires attention at your hands, and to be well agitated among the London members generally.

Mr. PRICE : I should like to draw your attention to a circumstance that occurred a short time ago. I was attending a suspected case of glanders, and the owner told me he was a subscriber to the College, and could get any of the professors to visit him for five shillings and one shilling for "bus" fare. From after inquiries I learnt that the professor could not go, so the College sent the hospital surgeon, and he was paid the six shillings. Nine months ago I attended a cob, and going one morning found he had vanished to St. Pancras; he was there six months, the bill came to £30, and instead of charging their ordinary rates as per advertisements, they only charged fifteen shillings per week, which they have no right to do. I am in a position to prove the truth of my assertion, if necessary.

The CHAIRMAN : Gentlemen, this matter pertaining to the College competition with its graduates has been discussed in the VETERINARY JOURNAL and Lay Papers during the last year or so. In the VETERINARY JOURNAL of 1875, and in the *Live Stock Journal*, last year, one "Junius," a member

of the profession, started the subject. He made out that the College had not made strides in scientific research, but had extended its area for much business, and that the sending forth from its portals a duly qualified student as a veterinary surgeon did not appear to be its aim. The articles also spoke of the little progress the science of veterinary medicine had made under the late professors. I wrote in reply to "Junius" (in *Live Stock Journal*, October 11th, 1878) :—"Under the present Principal much has been done in the College interior ; no one can complain of its requirements as a Veterinary establishment on a large scale, and although the pupils' fees have been augmented some thirty-five per cent."—it should have been ninety per cent. —"the College fees to the subscribers are the same." Here I give the College tariff and ask, "Can the public complain ? Can 'Cavalier' complain ? Certainly not. The institution should be popular with them, and its professors held in the highest esteem. For what ? Why, veterinary services on co-operative principles ! How far this is just to the Metropolitan practitioners I will leave your readers to decide ; but surely more than this should be expected from a scientific institution—the Royal Veterinary College of England (for there is none other). The amount of business and trade should not be the gauge, but the amount of useful scientific and practical knowledge sent forth from its portals into the world—sound scientific research, printed and published for the good of mankind." My closing remarks are: "I trust no more splenetic remarks may emanate anent the St. Pancras School, but that as time rolls on reforms may develop, and the stipends of the professors improve, so that they may work within the college walls only, and in the cause of science ; that all out-door practice shall be left to the practitioners (its former pupils) to whom it justly belongs and shall look up to their *alma mater* as their friend and not their foe, snatching from them their bread of life." "Junius" advocates the formation of a Veterinary Medical Board, and the sequel of these meetings may be the formation of such a board ; there can be no doubt it would be very advantageous to us.

Well, gentlemen, so far as writing has gone, no advantage has arisen, and unless the members of the profession stir themselves up (hear, hear) nothing is likely to be done. The Governors of the College are a body of gentlemen who are doubtless willing to advance the interests of the profession ; and should a deputation wait upon them, I am sure they will grant the practitioners a fair hearing. (Hear, hear.) I must say that it would have been far more satisfactory had the Principal of the College brought this matter forward to their consideration without this pressure. (Hear, hear.) We need not touch upon any subjects, than those which affect the interests of the practitioners direct, and the following points might be laid before the Governors for consideration, viz. :—

1st. The insignificant fees charged for the professors' knowledge, skill, and influential opinion to the subscribers.

2nd. The out-door practice carried on by the professors, contrary to the College rules and regulations as published. Horses being examined outside the College walls continually, and nearly all the important public exhibitions or shows being under their private control as well.

When the College was in infantile life, it was doubtless necessary to adopt measures likely to obtain public notice, and patients for the new innovation ; but now, in its adult life, the public do recognize its worth, and are ready to appraise it. But when the Governors permit so slender a value to be fixed on a professor's skill, at what value will the public estimate their qualified pupils ? The fees of these pupils have been raised some ninety per cent. ; why should not the other fees be raised in like proportion ?

The public gauge the fees of the newly-fledged graduate by these paltry College charges ; surely, if higher education and fees be demanded from the

pupils, a commensurate return should be offered them by the *alma mater*. Moreover, by raising the College tariff to its subscribers, the Governors may be able to make the stipends of the professor's sufficient, so that they may deliver up the various lucrative private appointments and practice wrested from the metropolitan practitioners, by virtue of their "titular" distinction, which, unfortunately for the graduates, gives them public precedence. The stipends of each professor being made on an equality with his professional education and skill would prove an incentive to scientific study and research —the lawful occupation of a professor—and conducive to the welfare of the institution and the profession, a far more satisfactory state of things than exists at present, whereby we have the taught thrust aside in the battle of life by the teacher, who takes the only chance an industrious, well-informed practitioner needs in the public duties of a profession. If the professors refused the public appointments, or were not allowed to practice outside the institution, as by rules enacted by the Governors, then the graduates would have fair play, and, in the end, the profession and professors have interest in common. The welfare and advancement of the profession and the schools would be promoted, and probably fewer students would be so frequently rejected. The notice of the Governors should be directed to the *fact* that the subscribers to the college are mostly men of wealth and position—large companies and firms—able, though not willing, to pay fair fees. The system does not exist for the poor and needy, or for the student's advantage of practice, for higher fees would not deter the opulent from seeking the opinion or skill of a learned professor, and it it is most probable that as soon as the general public knew the professors were always to be found within the college boundary there would be more cattle practice, which is so much needed there. With reference to the financial position of the College adverted to by Mr. T. Moore, I think we have nothing to do with that. I think the guinea fee for examining is a fair one, and it should be general. The other day I was shown a receipt by a West-end member for 10s. 6d., for examining a horse. Mr. Rowe's experiences are those of every member of the profession in London, as he states ; and I think what Mr Price has told us about the hospital surgeon being sent for 5s. and 1s., bus fare, is preposterous, and deserves to be exposed. I agree with Mr. Rogers as to sending a deputation to the Governors, but think we had better hold another meeting first, when I hope to see the professors and a few of the Governors, so that the subject may be fairly discussed.

Mr. J. MOORE : I agree with our chairman when he says the Principal of the College ought to have been the first to introduce the reforms we are seeking. I am afraid we are not likely to get much help in that quarter, for I well remember what occurred at the time the College sought a charter. I was on the Council at the time, and so was the Principal ; but he never said a word about the matter, and it was a mere chance it eked out. The effect would have been to give the St. Pancras School the right of granting its own diplomas, and causing a split in the profession. This was not by any means compatible with the College boasts about what it had done to improve and cement good fellowship. I think the Governors acted as gentlemen in omitting the objectionable clauses, after hearing what the Royal College of Veterinary Surgeons had to urge against them. We have three members of the profession among the Governors, and we must look to them for assistance. I think it would be a good thing to form a society to look after our political interests. It need not be a trades' union.

Mr. ROWE : I will point out that the three gentlemen on the Board of Governors, Sir F. Fitzwygram, Mr. Harpley, and Mr. Collins, are all army men who have little in common with us, and do not feel the competition. No one will "bell the cat." Some have a personal feeling in the matter, and many have held aloof from this meeting, although they know in their hearts

they would be the first to profit by any alterations made through its instrumentality.

The CHAIRMAN: I think it would be better if the practitioners bound themselves together, so that they might be fairly represented on the Council of the Royal College of Veterinary Surgeons. I think also that it should be laid down that no professor, or at least no Principal, should be elected President. In the present instance, we cannot ask the President to assist us either by his presence or advice, he being the Principal of a Scotch School. A President should be a man who has made his mark in the ordinary exercise of his profession; two or three such men, associated with the army men as Governors of the Royal Veterinary College, would tend to mend matters very materially. Mr. Price hopes Mr. Fleming will attend any future meeting. I am sure we all have that hope, and I think he would have been here to-night had he been in London; but we all know we cannot ascribe his absence to his want of interest in matters affecting the professional welfare. I see some gentlemen here who have come many miles to attend this meeting, and as the hour is late I propose that the meeting be further adjourned to some date to be duly announced; and that in the meantime the Council of the Royal College of Veterinary Surgeons be asked to kindly allow us to meet in their Council Chamber.

The proposition having been put was carried unanimously, and the meeting accordingly adjourned.

THOMAS MOORE, *Hon. Sec., pro tem.*

PATHOLOGICAL SOCIETY OF LONDON.

Pyæmia, Septicæmia, and Purulent Infection.

AT the meeting of this Society on May 20th, the report of the Committee on this subject, which was composed of Drs. Ralfe and Greenfield, and Messrs. McCarthy and Beck, was presented to the Society by Dr. Ralfe, the Secretary to the Committee, who read an abstract of the results that had been arrived at. The report was illustrated by a large number of microscopical specimens. It was divided into three chief divisions. The first contained statistical information as to the occurrence of the diseases in question in the surgical wards of the principal metropolitan hospitals for the last ten years; with careful analyses to ascertain whether any connection could be traced between their occurrence and the state of the weather, etc. It was remarked that the great want of uniformity in the mode of drawing up the hospital reports had been a serious hindrance to the compilation of this part of the report. The second division contained detailed accounts of 156 cases, classified according to their clinical and pathological features, with a view to ascertain how far the diseases in man corresponded with morbid states of a similar nature produced experimentally in animals. In the third division, a description was given of a large number of microscopical specimens of various organs taken from typical cases, together with observations on the blood and urine. Some of the microscopical specimens had been made before the death of the patients, with a view to illustrate the nature of the pathological changes in different stages of the diseases. In the second division of the report, details were given of twenty-nine cases of septicæmia, and of 127 of pyæmia. The cases of septicæmia were further divided into septic intoxication and septic infection. Under the term septic intoxication were included those cases where the dose of septic poison was so great as to kill the patient within a few hours of its absorption. This did not appear to be a common occurrence in man, only two cases being included in the report. For its occurrence, there must be a large quantity of septic material in the wound, and this material must be rapidly absorbed. These

conditions were rarely present, and, therefore, if septic intoxication in any way comparable to that produced in animals ever occurred in man, it must be in cases where there was a large wound, which, from its situation or shape, was difficult to drain; the most favourable conditions being the presence of septic material in a serous cavity, as in the peritoneum after ovariotomy, or in wounds of large joints. The symptoms in such cases came on about one day after the production of the wound, when decomposition had thoroughly set in, unless special means had been taken to prevent it. Under the other division, headed septic infection, were included cases of septic poisoning without metastatic inflammation—common septicæmia, it fact. In this disease, there was a true infective process. The poison, when absorbed, multiplied in the organism, and the blood of the animal so infected had, by inoculation, started a similar condition in another animal. The effects of the poison were not proportionate to the dose; and the development of the disease was slower, and the duration longer, than in septic intoxication. The evidence to prove the existence of the disease in the human subject must be looked for in the following directions, viz., the existence of a wound of such a size as to make a fatal dose impossible; evidence of infection from one patient to another; and the presence of organisms in the blood during life or immediately after death. The 127 cases of pyæmia were divided into eight groups, viz.: 1. Cases where there was no evidence that the secondary inflammations were due in any way to embolism; and these again were subdivided into (*a*) Cases where visceral disease was absent, and, (*b*) Cases where visceral abscesses were present, but where there was no evidence of thrombosis or of softening clot to be found: 2. Cases where thrombosis had occurred, but where it was apparently due to the condition of the blood: 3. Cases where there were thrombosis, softening of the thrombus, and secondary abscesses in other viscera, but not in the lungs: 4. Cases where there were venous thrombosis and softening of the thrombus, with secondary abscesses in the lungs, and in other viscera or tissues: 5. Cases in which there were venous thrombosis and softening of clots, with embolic abscesses in the lungs only: 6. Cases where there were thrombosis and softening of clots without any embolism: 7. Cases of pyæmia secondary to acute necrosis of children: 8. Cases of pyæmia secondary to endo- or myo-carditis. The third part of the report contained a series of observations upon the blood and urine in three diseases. The blood had been examined in eighteen cases of pyæmia and septicæmia; and bacteria had been found in most, though not in all of the cases. Six forms of bacteria were met with; 1. simple jointed filaments; 2. ovoid bodies; 3. large spherical bodies; 4. dumb-bell bacteria; 5. rod-shaped bacteria; 6. protoplasmic masses, corresponding to large micrococci in size and appearance. This latter variety was met with in one case only; the dumb-bell variety was also only seen in one case. In five cases, the bacteria presented a great variety of forms; in three cases, the form of the bacteria was not noted; in the rest, there were globular forms occurring in pairs and chains, associated with very minute or ordinary rod-shaped bacteria. It would thus appear that, so far as observations went, there was no one form of bacterium peculiar to any one form of septic disease. The white blood-corpuscles were found to be increased both relatively and absolutely, but in very varying degrees in different cases, and at different periods of the disease; the variations were not found to coincide with any change in the temperature or with any definite symptoms. In one case, the lowest proportion followed the occurrence of repeated rigors. In the examination of the urine, no special chemical characteristics were noted, except such as are observed in other acute forms of pyrexia. The organic solids were slightly increased, the inorganic solids somewhat diminished, chiefly as regards the earthy phosphates; it was possible that the diminution in the

inorganic constituents was due to the diminished ingestion of food, or even to the retention of some of the waste material in the blood to serve for the nutrition of the organisms. The potash, which, it had been suggested, might be increased in consequence of the destruction of the red blood-corpuscles, was found to be below the normal average. The report concluded with an account of a large number of microscopical examinations of the various organs. In a great number of the cases, micrococci were found in most of the organs. These micrococci were always situated in the blood-vessels, being chiefly in the capillaries. In the capillaries, they completely blocked the vessel, and in some instances the vessel appeared to be ruptured or partly absorbed, so that the micrococci were seen to be extruded for some distance into the contiguous tissues. In the large vessels, they formed a layer of uniform thickness, lining the walls. Their distribution in the different organs was very unequal. Bacteria were found in two cases only, in both of which they occurred in the rod-shaped form. In one case, they occurred in a glomerulus of the kidney; but it must be mentioned that in this case the epithelium of the kidney was much decomposed. In the other case, rod-shaped bodies were met with in the heart of a patient with myositis; in this case, the *post-mortem* examination was made very soon after death, and hence the presence of bacteria could not be due to decomposition. It was possible that some change in the chemical composition of the tissues of an organ might be necessary for the growth and multiplication of these different organisms, and that this change was induced by the pyæmic poison. If this were so, the presence of these organisms must be looked upon as an evidence rather than as a cause of pyæmia. In almost all cases, changes were found in the blood-vessels. As a rule, the epithelioid membrane was detached to a greater or less extent. In some places, the detachment had taken place *en masse*. In a good many cases, the deeper layers of the intima were hypertrophied, producing a diminution in the lumen of the vessels, apparently due to obliterative endarteritis. Sometimes this hypertrophy was followed by degeneration, a condition which was especially seen in the glomeruli of the kidney. In some cases, the external coat was hypertrophied, and this, again, was frequently degenerated like the intima. These changes were not found in the venules, although thrombi were very common in them. No special changes were found in the walls of the larger veins, except such as were associated with inflammation in the surrounding tissues. The thrombi in the veins and venules were mainly composed of leucocytes and fibrin; sometimes the entire channel being thus blocked; but in some cases, a passage was left patent on one side. Occasionally, minute abscesses were met with, connected with, and apparently dependent upon, the thrombi.

The PRESIDENT, in proposing a vote of thanks to the members of the Committee who had drawn up the report, stated that the appointment of the Committee to investigate the subject was due to the initiative of the late lamented Dr. Murchison; and it was through his efforts that the grant had been obtained from the Government, without which it would have been much more difficult to carry out the investigations. It was not in accordance with the rules of the Society to permit any discussion on the report, which would, however, be printed *in extenso* in the *Transactions*. There could be only one opinion as to the great value of the report, which, without any doubt, will have greatly added to our knowledge of the subject.

Three Varieties of Skin-disease in the Horse.

Dr. THIN, on behalf of Mr. FLEMING, 2nd Life Guards, read some notes on three cases of skin-disease in the horse. The first was a case of multiple sebaceous tumours, varying in size from a pin's head to a bean. They were encapsulated, the capsules being lined with flattened epithelial cells. The

second case appeared to be one of *erythema circumscriptum*. The disease had begun with suppuration of the submaxillary glands, which had greatly prostrated the animal. This was followed by the appearance of discoid elevations, varying in size from a sixpenny-piece to a florin, in various parts of the body. The margin of these swellings was raised and hard. Microscopically they were found to consist mainly of serous effusion, with scanty infiltration of leucocytes; and they would appear to have been due either to pressure on a limited area, or to some local injury to the blood-vessels of the patch. He would suggest that some poison had been absorbed by the blood, which had made its way into the walls of the blood-vessels, bringing about the effusion. The third case was one which he had at first thought to be Eczema, for the name was fully warranted by the symptoms, the eruption being attended by itching and a gummy discharge. Microscopically, however, it was found not to be of that nature. There was destruction of the sebaceous glands, the hairs having fallen out. In the deeper layers of the epidermis were minute abscesses, such as may be met with in the skin of a horse suffering from tinea tonsurans. There was no cell-infiltration, no swelling of the bundles of connective tissue, nor any serous infiltration, as in Eczema. Hence the disease was not Eczema, and, not being a perifollicular disease, it could not be called Acne.

The PRESIDENT stated that he was familiar with the condition described, and had seen it in connection with a gall on a horse's back. He had thought it to be an Eczema. This animal had had two attacks.

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the London Hotel, Edinburgh, on the 4th June. The President, Mr. Rutherford, Edinburgh, occupied the chair, and there was a fair attendance of members. A motion by the President, that the Association subscribe annually the sum of one guinea to the Scottish Society for the Prevention of Cruelty to Animals, was carried unanimously. The President gave notice of a motion, recording the satisfaction with which the Association viewed the agreement recently concluded between the Highland and Agricultural Society and the Royal College of Veterinary Surgeons—an agreement calculated to lead to the complete unity of the profession.

Professor WALLEY exhibited a beautiful stuffed calf, with two fully-formed and distinct heads and necks, a double spine, and two tails. The fœtus had been forwarded to him by Mr. Taylor, Seaford, Co. Down, and he had it stuffed for the college museum. The fœtus being of a fair size, the two heads offered a serious obstacle to delivery, but this Mr. Taylor had effected without mutilating the calf, and the cow afterwards did well.

Professor WALLEY also submitted for the inspection of members, several other pathological specimens, including the head of a goat affected with osteo-porosis, and the cæcal tubes of a fowl, in the walls of which were embedded nematode worms. Mr. Dacre, of Manchester, who was present as a visitor, showed the proximal extremity of the radius and ulna of a heifer which had suffered from sudden and excessive lameness of the elbow joint. The lameness was not traceable to any external injury. After death the articular surface of the radius was found to be extensively diseased, the articular cartilage and underlying compact tissue being in places removed and the cancellated tissue exposed. The subject had been of a scrofulous constitution, and Mr. Dacre thought the arthritic disease was of that nature.

Mr. REID stated that for the past nine years, during which period he had been inspector at Leith, the burgh had never been free from Pleuro-pneu-

monia. He was now, however, able to report that there was not a case within the bounds, nor had there been one for fifty-six days. This very satisfactory state of things he attributed chiefly to the practice of inoculation, which had recently been carried out by Mr. Rutherford. Professor Walley, while inclined to give considerable credit to inoculation, thought the result was in great measure due to the operation of the new Contagious Disease (Animals) Act, which was preventing the introduction of new cases from without.

Mr. ROBERTSON, Kelso, in continuation of a paper read by him at a previous meeting, made the following remarks on the subject of Arthritic or Joint Disease in young animals :—"Having in my former appearances before you, entered somewhat in detail into the Morbid Anatomy and Pathology of Arthritic Disease in young animals, I had intended at this time more particularly to have directed your attention to its probable *Etiology*, examining in detail those various causes which observation and experiment seem to indicate as operating in its production. This, however, I will not now attempt ; but endeavour in few words to bring the subject to a conclusion at this time. I fear I have been somewhat tedious, and have prevented you from considering other matters at least equally important and interesting. If I have not given you aught new on the subject, or propounded any startling theory in connection with it, I have at least the satisfaction of having accomplished one great object, that of bringing this disease under the notice of this Society, there to obtain what facts and information others may possess who have encountered it in some of our animals.

"In previously remarking on the subject of Arthritic disease, notice was taken of its more extensive distribution and virulent form of development in all our domestic animals at the present time, than what appears to have been the case in the early part of the present century, or the latter part of last. I would also desire that you remember that it is chiefly in all these animals—horses, cattle, and sheep—a disease of the superior varieties, or it may be of any variety when bred and reared under markedly artificial conditions of existence, and that it rarely appears amongst our more primitive breeds, unless these are largely manipulated and interfered with, with a view to their rapidity or perfection of development ; that when appearing amongst a number of animals—calves or lambs—it rarely attacks isolated individuals, but rather assumes the enzootic form. Further, that when appearing among stocks, particularly sheep, we observe that the dams are very generally serious sufferers from some markedly systemic disorder.

"Although not ignoring the fact, that both the *Rheumatic* and *Scrofulous diathesis* may, in cases, act as sources from whence spring the varied phenomena presented during the development of certain forms of arthritic disease, nor yet that *Umbilical thrombosis* and disseminated abscesses are very generally accompanying features of the most virulent and largely distributed outbreaks of this malady, I am, nevertheless, rather inclined to the belief that there seems evidence sufficient to convince me that these conditions of structural changes, in connection with the articulations, that the omphalo-phlebitis and general pyæmic condition, may be most satisfactorily regarded as simply the outcome or development of a condition of fœtal mal-nutrition. The causes, whatever these may be, are *ante* not *post* parturient ; they must be looked for not as operating on the young animal after birth, but as those which influence its development during intra-uterine life. Inflammation of the umbilicus and umbilical vessels is, undoubtedly, a very prominent and early feature in all serious outbreaks of the disease. But this condition of these parts of the circulatory apparatus in these young creatures—foals, calves, and lambs—I most strenuously maintain is not solely or chiefly the result of inoculation with filth or septic matter through the

medium and because of the open umbilicus. During intra-uterine life we have the conditions of purulent omphalo-phlebitis, and particular and general thrombosis with disseminated abscesses. The animals are born with omphalitis well developed, and how can any amount of care, which the German pathologists so much insist upon, bestowed on the navel of the newly-born domesticated animal, or any attention to sanitary conditions, prevent a condition of things which already exists.

"Again, it is contended by those who object to its dietetic origin, that the strong as well as the weak are sufferers, and that it appears independent of the nature of the food of the parents. I am satisfied that it will appear in stocks on almost every variety of food. It is not the particular kind of food, so much, as its modes of administration, or the manner in which the animals are fed in relation to other circumstances and conditions. If you carefully analyze the different outbreaks with which you may be familiar, you will find that this arthritic disease seems to appear as the sequel to every or any condition and combination of conditions which tend to the production of animal tissues and elemental structures imperfectly elaborated or developed.

"The more I consider the matter, and the more I have to advise regarding the rearing of our young animals, the more am I convinced that the best of our stock animals, male and female—particularly the former, in those varieties of the several classes which by general consent are regarded as the most highly developed and improved—are, in much pertaining to their constitutional vigour, as well as powers of procreation, greatly impaired, and, in many instances, irreparably damaged by the system of dietary to which they are subjected in order that they may make a good appearance in the show-yard.

"No, Mr. Chairman and gentlemen, the pampering and forcing, the unnatural stimulation so much in fashion, will give us fat animals, but certainly it is not calculated to give us the most healthy and well developed animals, capable of transmitting to their progeny those qualities in the highest degree of perfection for which the variety may be particularly admired. It is a common remark by more skilled observers, when admiring in the show-yard our over-fed stock animals, that they seem very soft. This is critically and scientifically correct to an extent that they who make it little imagine ; for not only are the tissues of these animals marked by a want of tonicity and perfection of development, but we find that their progeny in fœtal life are characterised by similar features. In numerous instances the embryonic cells seem incapable of progress beyond a certain point, their protoplasmic contents, instead of undergoing progress in development, take on degenerative changes, and instead of consolidation in texture, the obvious condition is softening and liquefaction. Depend upon it, gentlemen, it will be of comparatively little benefit—all our treatment, even the prevention as applied simply to the young—so long as we allow the constitutions of the parents to be invalidated.

"I have said nothing as to the curative treatment, when this is attempted, in arthritic disease. I have left this to be taken up in the remarks and discussion which may follow. I will leave the matter in your hands, thanking you for the patience with which you have listened to my somewhat lengthy treatment of this subject, and trust that all who have seen this disease will give us their experience ; for I am satisfied that it is only by a collection of facts and observations, that any real progress can be made in the science of medicine : as also, that the youngest practitioners of any department of the healing art, as long as he adheres closely to these indications, is fully entitled to call in question the deduction or hypothesis of the fathers of his profession."

During the discussion which ensued, the SECRETARY stated that in reply to

an invitation to attend a former meeting, he had received from Mr. Gerrard, Romford, a letter, regretting that distance would not prevent him to be present to hear Mr. Robertson's paper, and at the same time a short communication, embodying his own views and experience of the disease. At the request of the members, the communication was read. The opinions of Mr. Gerrard in the main coincided with those of Mr. Robertson.

The meeting terminated after a hearty vote of thanks to Mr. Robertson, for this and other valuable contributions which he had made to our knowledge of Arthritic Disease in young animals.

JOHN MCFADYEAN, *Secretary.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring quarterly meeting was held at the Queen's Hotel, Leeds, on the 29th April, the President, Mr. Peter Walker, in the chair. The following members were also present, viz., Messrs. Naylor, Greaves, Freeman, James Cuthbert, Anderton, J. M. Axe, Lodge, Schofield, W. G. Spillman, G. Carter, Atcherley, J. E. Scriven, Edmondson, J. S. Carter, Pratt, Beeson, Professor Axe, and the Secretary. Messrs. Robertson, V.S., and F. Cuthbert, student, were present as visitors. Apologies for non-attendance were sent by Professor Williams, Messrs. Dray, Bale, Danby, Joseph and John Freeman; also Messrs. Tom Taylor, W. A. Taylor, and other friends.

The minutes of the previous meeting were read and confirmed.

Professor AXE delivered a highly instructive and interesting lecture entitled "Aids to Diagnosis." He regretted exceedingly that circumstances had not permitted him to commit his thoughts to paper, but he trusted he should be sufficiently explicit verbally. The Professor confined himself almost exclusively to elucidating the physical modes of diagnosis, and passed in review the uses of the opthalmoscope, microscope, stethoscope, thermometer, and urinometer. He regretted that Veterinary Surgeons generally had not studied the various uses of these instruments; but he trusted that the remarks which fell from him that afternoon would not fail to raise a spirit of inquiry amongst those present. The opthalmoscope had produced marvellous results in the sister profession, and he anticipated that it would reveal to us the cause of "shying" in horses. By its use we could look into the inmost recesses of the eye; and without the transparent media being at all affected, the instrument would reveal morbid conditions of the optic nerve, and other structures: blood blotches or old clots upon the retina will often be detected in the eyes of shying horses. After expatiating more fully upon the uses of the opthalmoscope, and the patent effects ensuing therefrom, he sincerely hoped his professional brethren would study the uses of this valuable "aid to diagnosis." Since the compound microscope has been invented, it has revolutionized the sciences of zoology, morbid anatomy, chemico-physiology, etc. "You are aware, of course," he said, "that the use of the microscope is now taught at the Veterinary schools, and I may state, *en passant*, that never were there so many available means of disseminating information to the Veterinary pupil as are now given at the schools. By the microscope we detect the parasite infecting the skin; it reveals minute organisms in the blood, and also the *bacillus* of splenic fever. What should we have known as to the existence of germs unless with the aid of this wonderful instrument? Besides revealing organisms existing in the blood and skin, the instrument is also useful to Veterinary Surgeons in determining the true nature of the morbid products existing in the urine, and thus determining whether we have disease of the bladder or kidneys. The thermometer has received more general use than either of the other instruments on account of its simplicity, I presume; still the amount of good derived from its use is infinitely less than from the microscope or opthalmoscope. The thermometer

merely tells you that an animal is ill, and thus acts as an auxiliary to the other sypmtons. The other instruments reveal and bring the disease before your eyes. The stethoscope is much less valuable as an aid to diagnosis in animals than in man. The presence of hair and thick skin prevents the complete transmission of vibration, but the instrument will generally inform us how far disease has progressed, etc., etc. The urinometer shows the state of the urine, in cases of chronic indigestion or liver disease ; where we have defective assimilation the specific gravity of the urine becomes altered, and therefore in these cases the use of the urinometer is beneficial."

In the discussion that followed the lecture, Messrs. Naylor, Greaves, Freeman, and other members took part.

Mr. NAYLOR proposed and Mr. GREAVES seconded a most cordial vote of thanks to Professor Axe, which was carried unanimously.

Mr. BEESON exhibited a parturition hook, the handle partially composed of movable hinge-joints ; also a clamp to seize the ear of the foal or calf, both these instruments being his own invention.

WM. BROUGHTON, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE first meeting of this Association was held in the Douglas Hotel, Newcastle-on-Tyne, on May 31st, 1879. Mr. D. DUDGEON, President, in the chair. There were present—Messrs. C. Stephenson, H. and A. Hunter, G. Elptick, J. Gillespie, J. Corbett, W. S. Prengle, W. J. Masters, C. T. Sterten, Dr. Armstrong, Newcastle-on-Tyne ; Mr. D. Macgregor, Bedlington ; Mr. W. Wheatley, S. Shields ; Mr. J. Gofton, N. Shields ; Mr. W. J. Mulvey, Bishop Auckland ; Mr. W. Anderson, Hexham ; Mr. J. Nisbet, Fence Houses ; Professor Williams, Edinburgh ; Messrs. Foreman, Junrs., Leadgate ; A. L. Butters, Sunderland ; C. Hunting, S. Hetton ; and the Secretary.

Letters of apology for non-attendance were received from Professor Pritchard, Messrs. T. Greaves, J. Welsby, D. Hutcheon, J. Storie, J. Meikle, T. Foreman.

The PRESIDENT said he would not trouble the members with an inaugural address, as their time would be far more profitably employed in listening to Professor Williams' paper. He had an intimation to make which would meet with the approval of all present, viz. : That Professor Williams had been elected President of the Royal College of Veterinary Surgeons for the ensuing year. This announcement was received with great applause.

Professor WILLIAMS then read a very able paper on "Splenic Fever and the History of the Bacillus Anthracis," exhibiting microscopic drawings of the Bacillus. At the conclusion of the paper, he thanked the members for the attention they had given him, and also for the hearty manner in which they had received the announcement of his election as President of the Royal College of Veterinary Surgeons, a post which he would endeavour to fill to to the best of his ability. He also informed the members that the next annual meeting of the Royal College of Veterinary Surgeons would be held in Edinburgh ; he referred to the union which had been brought about with the members of the Royal College of Veterinary Surgeons and the Highland Society, a thing which he had long striven for, and which had now been brought to a successful issue, mainly through the indefatigable endeavours of their late President, General Sir F. W. Fitzuygram.

A very animated discussion followed the reading of the paper, in which Messrs. Macgregor, Gofton, Stephenson, H. Hunter, Nisbet, A. Hunter, Mulvey, Elptick, C. Hunting, and Dr. Armstrong took part.

Mr. STEPHENSON proposed, and Mr. H. HUNTER seconded, a vote of thanks to Professor Williams for his kindness in coming and reading them such an instructive paper.

Professor WILLIAMS having replied, the meeting terminated.

Afterwards the members and guests sat down to an excellent dinner, at which all the patriotic and other toasts were ably proposed and responded to, a very enjoyable evening being spent.

G. R. DUDGEON, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly Council meeting held on June 4th, Colonel KINGSCOTE, C.B., M.P., reported that there were no reports on cases investigated during the last month from the Royal Veterinary College. A letter had been received from Dr. Burdon Sanderson, informing the Committee that owing to Dr. Greenfield not having been able to obtain material for prosecuting experiments on Anthrax, nothing has been carried out in this direction. The Committee recommended that the Metropolitan Board of Works be communicated with in reference to obtaining information relative to outbreaks of disease of animals in the metropolis; and that a copy of the rules and regulations guiding the examinations for prizes and medals for proficiency in cattle pathology be forwarded to the Lord Lieutenant of Ireland and the Secretary of the Highland Society, together with an explanatory letter suggesting that the prizes should be open to students from all parts of the United Kingdom, and inviting their co-operation to carry this into effect. Professor Simonds had reported that experiments were being carried on at the Royal Veterinary College with respect to the disease which is known by the name of Trichinosis.

This report was adopted.

Army Veterinary Department.

WE have much pleasure in announcing that the New Veterinary Warrant has been approved of in full, and will be immediately published in India. It appears that the increase in pay is substantial—the Inspectors receiving about £250 a-year more than at present, the other ranks in proportion. This removes one of the more serious grievances of which complaint has been frequently made in this Journal.

Inspecting Veterinary Surgeon Gudgin has been appointed to the local rank of Principal Veterinary Surgeon while serving in South Africa. This is the first recognition on record, we believe, of the services of the Veterinary profession in the field, and the concession is due to the strong representations of the head of the department, Mr. Collins.

In future, an Army Veterinary Surgeon will be a member of the Board of Survey on all horse-transport ships fitted out in this country.

Veterinary Officers attached to the Royal Artillery and Army Service corps will not in future be gazetted to these corps. Their names are to be borne on the departmental establishment, and they will take their tour of Foreign Service according to their position on the general roster.

Veterinary Surgeon C. W. Gillard, 15th Hussars, is returning home from India to appear before a medical board.

The newly appointed Veterinary Surgeons have been posted as follows for probationary duties:—Messrs. A. W. Mason, Charles Rutherford, Kay Lees, and F. W. Forsdyke to Aldershot; J. T. Dibben, E. W. Goldsmith, and Francis Kennedy to Woolwich; Edmund Day to Canterbury; and A. W. Drake to Colchester.

The *Army and Navy Gazette*, of June 14, has the following notice :—"There will shortly be a vacancy for an Inspecting Veterinary Surgeon by the retirement of Mr. B. C. R. Gardiner, who has attained the prescribed age. On Mr. Gardiner's retirement, Mr. A. J. Owles will, it is understood, leave the head quarters of his department for the district charge at Woolwich, being succeeded by Mr. G. Fleming, from the 2nd Life Guards, who will obtain the rank of Inspecting Veterinary Surgeon. Mr. Fleming's promotion will meet with the general approval of his department, the interests of which he has furthered in a thousand ways."

Parliamentary Intelligence.

House of Lords.—May 29th.

TRICHINOSIS IN AMERICAN PIGS.

The Earl of BELMORE asked the noble Duke the President of the Council whether it was true that swine landed in this country from America had been found to be affected with Trichinosis, and if so whether the Government intended to take any precautions against the introduction of the disease.

The Duke of RICHMOND and GORDON.—In answer to my noble friend, I have to state that in consequence of reports from abroad, a certain portion of swine landed from America in this country were subjected to examination by the proper officers of the Veterinary Department, and I regret to say that the result has been the discovery of Trichinosis in some of the animals. The investigations are being continued, and therefore I am unable to state what steps, if any, it may be necessary to take in the matter. I would remind my noble friend that swine coming from America are killed at the port of landing. I am glad that my noble friend has put the question, because it enables me to caution the public in the matter, and to mention that the best precaution against this complaint—so dire of its effects to the human species—is that all portions of the swine, ham, pork, and bacon should be thoroughly well cooked before they are made use of (hear, hear, and laughter).

Obituary.

THE registrar of the Royal College of Veterinary Surgeons has reported the following deaths among members of the profession :—

James Maxwell, Thornhill, Dumfriesshire,	who graduated in	1835.
G. W. Cooke, Ingham, Lincolnshire,	,,	1867.
J. Tilsley, Tregynow, Montgomeryshire,	,,	1861.
J. Turner, Sheffield,	,,	1851.
P. McKenzie, Cargill, Perthshire,	,,	
J. K. Haire, Jersey,	,,	1859.

Mr. Haire was in his earlier years brought up to the law, but fancying the veterinary profession he entered its ranks, and after graduating went to St. Helier's, Jersey, and entered on practice. He probably soon found that his college education alone would not suffice to enable him to succeed in his career, and that lacking clinical knowledge and experience, he must acquire these at painful expense of time, patience, and even reputation. However, this may be, he at any rate early commenced a livery and posting business, and is credited with having been the first to organise a system of excursion cars to run round the island. He was also the first Englishman elected to the post of Centenier, and the only one who has ever sat in the States Assembly. He held the office of Veterinary Surgeon to the R. M. Artillery.

Jurisprudence.

THE KNOWLEDGE OF PIG DISEASES IN THE MEDICAL PROFESSION.

On May 3rd, at the Bilston Police Court, before W. H. Rogers and S. Loveridge, Esqrs., Jabez Stanley, butcher, Can Lane, Sedgley, was summoned under the Bilston Improvement Act, by Mr. J. D. Wassell (clerk to the Board of Commissioners), for being in possession of, and exposing for sale in Bilston Market, twenty-eight pieces of pork which were in an unsound state, and unfit for human food.

Mr. E. H. Thorne appeared for the defence.

Inspector Evans stated that on the afternoon of Monday, the 21st of April, from information he received, he went, in company with Mr. W. M. Hancox, the medical officer of health, and P. C. Smith, into the Bilston Market, and there saw on defendant's stall, which was in charge of a servant, twenty-eight large pieces and sundry small pieces of pork, which was shown to Dr. Hancox, and afterwards seized by witness, and the whole destroyed by order of Dr. Best. From the appearance of the pork witness should say it was diseased, as it appeared to be measled.—Cross-examined by Mr. Thorne : Had known defendant for some time, and had never known anything against him previously.

Mr. W. M. Hancox, medical officer of health for the township, said on the date in question he inspected twenty-eight pieces of pork, which he found to be in a measly condition, and as such was diseased. It was a febrile disease which would permeate the whole system of the animal, and consequently the flesh would be unfit for human food. Witness condemned the pork as such.—Mr. Loveridge : Was it tainted at all?—Witness : It was covered with rusty blood looking spots all over the surface.—Mr. Hall (magistrates' clerk) : Was it decomposed?—Witness : It was not decomposed, but Mr. Best also saw it and agreed with me that it was unfit for human food.—Mr. Thorne : What sort of disease is the measles?—Witness : I consider it a febrile disease which permeates the whole system, and determines itself upon the surface, showing itself by spots.—Mr. Thorne : That sounds a very professional description.—Witness : It is right.—Mr. Thorne : Is it the same in pigs as human beings?—Witness : Analogous, I believe. I am disposed to think it would be the same in pigs as in human beings.—Mr. Thorne : Don't you know that measles in pigs are never the same sort as in human beings?—Witness : It is a disease as much in the pig as in the human subject.—Mr. Thorne : Is it the same sort of disease?—Witness : There may be some modifications owing to the structure of the animal.—Mr. Hall :—I suppose you have not attended pigs in disease?—Witness : No I have not. (Laughter.)—Mr. Rogers : You are not a pig doctor?—Witness : No I am not. (Renewed laughter.)—In further cross-examination, witness said he was quite satisfied that the meat was diseased, and as such was unfit for human food. He had never observed the same appearance in healthy pork. Could not tell whether it was English or American pork ; it might be Irish for all he knew. Did not know that a disinfectant was used upon pigs coming from abroad, and that it produced a strange superficial appearance to the skin, and that, notwithstanding, the pork might be healthy. He did not believe any disinfectant could be applied to make it present the appearance it did. Dr. Best cut into one of the legs, and it appeared to be very flabby.

The Bench pointed out that it was immaterial whether the pork was measled or otherwise, so long as it was unfit for human food, as stated by the medical officer.

Mr. Thorne addressed the Bench for the defence, contending that Dr.

Hancox was altogether mistaken when he said the pork was unfit for human food. He said he should prove that the pieces seized were portions of two American pigs purchased by defendant from Messrs. Davis, of Wolverhampton, at market price, that they were killed at the Wolverhampton Corporation slaughterhouse through being merely distressed and not diseased, and that they were passed by the market inspector, who saw them twice after they were killed.

Mr. Dawson, inspector of the Wolverhampton Cattle and Pig Market, was called, and stated that there was a slaughterhouse belonging to the Corporation provided near the market to slaughter distressed beasts. On the 16th of April witnessed inspected nine pigs there, and condemned five of them and ordered them to be destroyed. There were there, amongst others, two slaughtered pigs belonging to defendant, which in his opinion were quite fit for human food; £7 would be a fair price for the two. Measles in pork arose from *animalculæ* in the lean of the meat, something like rice in appearance. Pigs imported from America and Ireland were continually disinfected whilst on board the vessels, and the result was to make the surface of their skin appear scalded, and leave red spots upon them.—Mr. Rogers: Do you say anything of the bacon?—Witness: I don't know anything about the bacon. I am speaking about the pigs as green pork. He considered that the five pigs he condemned for slaughter were "typhoid pigs." They had nothing of the same appearance as the two belonging to defendant.

After a short discussion between the Bench, Mr. Thorne and Mr. Hancox,

William Evans, a slaughterer at the Wolverhampton Corporation slaughterhouse, was called and said he remembered two pigs being bought by defendant, and examined by Mr. Dawson, the inspector, who passed them. Witness dressed the pigs, which were not diseased, but a little spotted, that being caused he believed, by their having been overheated in the railway trucks, and by the disinfectants which were put into the trucks. Saw defendant purchase the pigs and give £7 for them, that being a good price. The market inspector also saw the pigs on the 17th of April, and again passed them. A salted ham was here produced and shown to the witness, who, although being cautioned by the Bench to be careful, positively identified it as belonging to one of the two pigs in question.

Dr. Hancox, looking at the ham, said it was a third larger than those seized. He also urged that the pieces of meat seized were portions of one pig only, and that the two hams had already been destroyed. How, he asked, could a pig have three hams? (Laughter.)

The witness Evans being questioned by the Bench as to why he a second time called the market inspector's attention to the pigs, reluctantly admitted that it was because he had a little doubt about them.

Levi Carrier, of Sedgley, a slaughterer in the employ of the defendant, said he considered the pigs were all right, and had eaten some of the pork. He admitted in cross-examination by Inspector Evans that when the meat was taken before Dr. Best, he (witness) cut into one of the legs of pork, and drew from Dr. Best the remark that "by doing so he had not mended his case."

Mr. Thorne intimated that this was as far as he could carry the case today, as he proposed to call a veterinary surgeon to give evidence as to the state of the pigs and the quality of the pork, &c.

The magistrates then retired with their clerk to their private room. Upon their return into Court, Mr. Rogers said they had given the case their consideration, and would grant an adjournment, if Mr. Thorne wished it, for a fortnight. He was sorry an earlier date could not be fixed, but he was going away and should not be able to be present until then.

Mr. Thorne acquiesced in this, but remarked that in the Wolverhampton

Borough Police Court it was the invariable practice in similar cases to call in a veterinary surgeon to tender evidence on the point.

Chief Superintendent M'Crea said under the Bilston Improvement Act it was only necessary to have meat condemned by the medical officer of health, and afterwards destroyed. In this case they had double security, the medical officer being backed up by the evidence of Dr. Best.

The case was then adjourned to that day fortnight.

On May 17th, Mr. Thorne intimated to the Bench that his object in now calling a veterinary surgeon to give evidence was to prove the quality of the ham produced in court on the last occasion, and also to speak as to the appearance of diseased meat.

Jabez Stanley, a son of the defendant, and who assists him in his business as a butcher, was called, and spoke to examining the carcases of the pigs after they were brought to Bilston Market, and finding nothing wrong with them, except that they were marked on the surface of the skin with red specks, the result of being overheated. Witness sold a portion of the pork in Bilston Market on the Saturday night following, without hearing any complaints made by the purchasers or the police, but on the Monday after, when he again attended the market with the unsold pieces, they were immediately seized as soon as he had unpacked them. The ham produced in court on the last occasion belonged to one of the two pigs.

Frederick Darley, in the employ of Messrs. Davies and Co., of Wolverhampton, from whom the pigs were purchased, spoke to the sale of the pigs to defendant at a fair price, viz., £7, at which time there was nothing the matter with them.

Mr. J. W. Hill, F.R.C.V.S., of the firm of Cartwright and Hill, Veterinary Surgeons, Wolverhampton, was then called to give the result of his examination of the ham produced in court on the last occasion, when defendant was examined. He said: On the 2nd of May I inspected a recently cured ham at the request of the defendant, and which was alleged by him to have been condemned by the medical officer, on the ground that it was measley. In the rind or skin of the ham I observed several isolated spots, which I carefully examined with a powerful magnifying glass, and also under the microscope after dissecting them out. These spots I found were due to capillary congestion, and were quite superficial in character, none of them extending beyond the skin. In my opinion they were caused either by an external irritant or from suspended circulation in the extremities of the blood vessels, from exposure to cold, most probably the former. The ham when cut in various places, presented no appearance of measles or any other disease; the muscle was firm in texture, healthy in colour, allowing for the change produced by salting, and sweet. The skin spots could not be associated with measles, as no such rash ever exists. The measle of the pig is a parasite, found imbedded between the muscles, and not on the skin, and does not bear the least analogy to human measles, which is essentially febrile disease due to absorption of poison into the blood. It is also, contrary to the pig measle, *non parasitic* and highly infectious. Any supposition that it was typhoid eruption may also be abandoned, from the character of the spots and flesh. The former would have been more diffused, confluent and extensive, devoid of bristles, and marks of ulceration or desquamation would be apparent; the spots would also be most abundant on the inside of the thigh, and not confined to the outside as in this case, while the flesh would have been flabbier, much darker in colour, and have quickly decomposed.

Mr. Hancox, the medical officer of health, said the ham examined by Mr. Hill certainly never belonged to the carcase of the pig he condemned.

Mr. Hill, in reply to Mr. Thorne, said he had had considerable experience in pig diseases, and had written a treatise on the subject of diseased meat.

If there were any febrile indication it would permeate the whole system. He knew that red spots were produced on the skin of pigs by disinfectants, and any one who was not experienced might mistake the spots for disease. The ham he examined was perfectly sweet, and the spots did not extend deeper than the cuticle, in fact only a little way into it.

Mr. Rogers said there was no proof that it was one of the identical hams. He had received a letter from Dr. Best, who ordered the meat to be destroyed, upon the subject, with his authority to make it public if he liked. Mr. Best was himself unable to be present, or would have been there to give evidence.

Mr. Thorne: If he were I should be prepared to cross-examine him and show that doctors might be mistaken.

Mr. Hancox again reiterated that the ham examined by Mr. Hill never belonged to the carcase he condemned, but to a much larger animal. The ham produced in court a fortnight ago was sound enough, and he was able to substantiate that as well as Mr. Hill.

Mr. Hill: I understand the whole of the pork was condemned for this spotted appearance: an external rash is not an indication of pig measle, the flesh of such an animal when cut has the appearance of being studded with rice.

Mr. Thorne having had Mr. Best's letter handed to him by Mr. Rogers, read it. It stated "that the pork when examined by him (Mr. Best) was in the condition commonly termed 'measley,' and the animal had probably died of disease. The case was a bad one, it being well known that the use of such meat for human food was highly dangerous, the disease being caused by interspersion of the eggs of *animalculæ* of a species of tape-worm throughout the tissues of the animal, and which, despite all ordinary cooking, would be communicable, and perhaps fatal to the persons eating it."

After a rather warm argument which followed between Mr. Thorne and the Bench, the former contending that the appearances described by Drs. Best and Hancox being not those of measles, no conviction should follow,

The Bench consulted, and Mr. Rogers said they had given the case the best consideration they could. They may be wrong in their decision, but did not think they were, and as defendant had previously well conducted his business, they did not wish to press a very heavy fine, but wanted it to go forth that these kind of cases could not go on with impunity, and that people were not to be poisoned by eating bad meat. Under the circumstances, therefore, defendant would be fined £5 and costs, or in default one month's imprisonment.

The fine was paid.

Notes and News.

Climate and Diseases in Zululand.—From a paper recently read before the Royal Geographical Society by the Rev. G. Blencowe, we extract he following: "The climate of the north-western part of Zululand is salubrious, and in no way injurious to the health of man or beast. The only disease against which care needs to be taken is the peculiar inflammation of the lungs in horses, which is known as horse-sickness. But this is avoided by keeping them in the stable till the dew is off the grass. Lung-sickness has ravaged the Zulu herds, as well as those of the neighbouring colonies, but it is rather an epidemic of occasional occurrence than a permanent disease of the country. For many years it has only existed in the Zulu country as the effect of contagion. The coast districts, from the higher general temperature and the greater abundance of moisture, are not so favourable to robust health as the higher inland parts."

More American Piracy.—The dishonesty which has long stained the reputation of American booksellers, who seldom lose an opportunity of seizing upon any English book and issuing it in the United States, without the permission of either author or publisher, who are thereby robbed of their property in the most barefaced manner, is again exemplified in the case of Fleming's "Veterinary Obstetrics." Mr. A. Cogswell, 24, Bond Street, New York, is the culprit this time, and he advertises as follows: "This work is one of the most valuable text books on veterinary science published, and the publisher, in issuing an American edition, has made an exact reprint of the latest London edition, including 212 illustrations, while the price has been reduced to one-half that of the English publication." The morality of Yankee publishers has yet to be discovered; it is certainly not to be found in their business transactions.

Alfort Veterinary School.—The French Government evidently does not believe that the Veterinary Schools are benefited by allowing the teachers to die in harness—or, rather, to succumb to senile degeneration while yet they are teachers. First, M. Rey was retired from the directorship of the Lyons School, then Lafosse from Toulouse, and now Reynal retires from the Alfort School. Their posts are filled by comparatively young men, who have abundantly proved that their cranial sutures were not prematurely ossified. Chauveau is director of the Lyons School, Baillet of the Toulouse School, and Goubaux, the *pro tem.* director of the Alfort School. All these directors have given ample evidence of their fitness for the functions imposed upon them, not only by the very successful ordeal they underwent before they were appointed teachers, but also by their well-known labours subsequently.

Veterinary Honours.—The *Revue des Cours Scientifiques* mentions that the professors of the Museum of Natural History of Paris, being called upon to nominate candidates for the chair of General Physiology, left vacant by the death of Claude Bernard, placed among the first in the list the name of M. Bouley, of the Institute, Inspector of the Veterinary Schools of France, and one of the most distinguished veterinarians in Europe. Veterinary Surgeon Zundel, of Mulhouse, Alsace, has been decorated with the Order of Stanislaus by the Emperor of Russia, for his writings on Veterinary Sanitary Science and Police. At the jubilee of the University of Copenhagen, Professor Stockfleth, of the Veterinary School, had the degree of Doctor of Medicine conferred upon him, while Professors Bendz and Barfoed were elected Doctors of Natural Science.

Correspondence, etc.

HONEST COMPETITION AT THE LONDON ROYAL VETERINARY COLLEGE, *VERSUS* THE INTERESTS OF THE VETERINARY PROFESSION AND ITS PRACTITIONERS.

To the Editor of the Veterinary Journal.

Dear Sir,—A report of the meeting of the members of the Royal College of Veterinary Surgeons, which was held on the evening of Thursday, June 6th, after the Veterinary Medical Society's meeting, will, I doubt not, reach you. In the absence of Mr. E. Coleman, the chairman elect, through indisposition, I was voted to the chair; and although I would have preferred that the duties had fallen to more influential and able hands, still I trust the meeting was so conducted as to bring the subject matter to the very front of the profession, to be thoroughly ventilated and adjusted. The meeting was

adjourned to the evening of that day six weeks, when it is proposed to hold the same (with the sanction of the President), at the Royal College of Veterinary Surgeons, Red Lion Square.

It is to be hoped that every member who has the interests of the profession at heart will be present, and take his part in the discussion ; and also those of the professors who can see the damaging influence the Camden Town School regulations have on the public and the practitioners, so far as the practice of the institution is concerned.

It is rather surprising that after your very able "leader" on this subject, in the November number of the VETERINARY JOURNAL of 1875, four years should elapse before action is taken to redress the wrongs to which the metropolitan practitioners have so patiently submitted for so very many years. Mr. Rowe said at the meeting that it arose from the fact that no one dared venture to "bell the cat." However, now this important duty has been done, I do trust the members will disprove your aspersions on them, in your Journal of August, 1875 (pp. 110 and 111), which says . . . . . "The great majority of the profession keep aloof from aiding in any undertaking, the advantage of which to them, under the present *régime*, they cannot be made to see."

My belief is that they not only *see*, but *feel*, the disadvantages of the present state of things, and the reason for their reticence is a "fear" of the Principal of the St. Pancras School, with a disinclination to mar the happiness of his colleagues in tutorial *togas*, with whom most of us are on terms of friendship and esteem. The position of the Principal of the Royal College at Camden Town, has been, from its foundation, that of "Emperor" in the world of Veterinary Medicine. Heretofore, he has been the dispenser of all favoured "posts," the guide of our "powers," and the "infallible" director of all the concerns of Veterinary Science in England. And who has been to blame for all this—the body of the profession, or its President? My opinion is that the Royal College of Veterinary Surgeons should have come out to the public gaze years ago : the President and his Councilmen being (or should be), the sages of the Art and Science, and take their responsible position as the Directors of Veterinary Science in England, and never permit any School or Teaching College, Principal, or Professor, to direct or dictate. And it is to be hoped that the outcomings of this present movement will develop their responsibility to the profession and the public, and lead to the assumption of their legal duties, rights, and privileges. Previous to the year 1843, the Royal Veterinary College stood alone as the representative institute of Veterinary Science, held all appointments, had all the responsibilities imposed on it, and granted its diploma. In that year the Royal College of Veterinary Surgeons was founded, and for what purpose? Why, the government of the profession, its advancement, and the examination of the students from the schools or colleges that were, or might be, thereafter established, not only in England, but the United Kingdom.

For years after the new foundation, the voice of the various professors of the Royal Veterinary College was heard above all others in council assemblies, and this continued down to almost the present day. Let the Royal College of Veterinary Surgeons take its position upon fair and just grounds, and if those in office now fail to attain the proper status for the college in the professional world, then the profession must, as one body, move it to its pedestal. In Dickens' dictionary, and also in Whittaker's, no mention is made of a Royal College of Veterinary Surgeons, yet we find a Royal College of Surgeons, and a Royal Veterinary College, with its principal and teachers. How is this?

Be all this as it may, now the movement has been started, we must keep *moving*, and *removing* all barriers to progress, and thus be true to ourselves.

The Governors of the Royal Veterinary College having the interest not only of their institution at heart, but the Veterinary Art also, cannot, and I am sure will not, refuse to hear the voice of the practitioners, and will give the deputation a fair hearing. It may however be asked by them, why have we not heard of all this before? The answer is plain. A Field or a Mavor, those born with the College, and a favoured few, cared not for the College and its terms; the Army Veterinary Surgeon was not interested or affected by its terms either; it was only the hardworking, sober, honest, intelligent and needy practitioner who felt the weight. Complain or murmur he dared not, for fear of displeasing his teacher, whose friendship he needed if in a fix with a client. His life (I mean professional, of course) depended on the summing up of the infallible teacher. So, as I have stated, the well to do, established, leading practitioners care not; the Army Veterinary Surgeons care not, and were not interested until you, Mr. Editor—an army man—had the barefaced effrontery to write that "leader" of yours referred to by me; and now, four years afterwards, we have action taken by a feeble few. May the little beginning lead to a large ending, as the old proverb goes.

When our present Principal went in for the reform he is wont to speak of, wonderful it appears, he failed to see the pernicious effect of the "Competition" on the graduates; and having arranged for higher fees from them, offered them some commensurate return "for bringing him more money," and better education. . . . . Pardon me, my dear Sir, I must heave a sigh. . . . Was all this done by our dear old Principal for the cause of science, elevation of our profession, and the attainment of better pospects and position in Society for our young graduates?

You observe, truthfully, in your leader referred to, "the subscribers are all men of opulence;" if they contract thus with the poor we could understand it, for it is next to "nothing" as a charge, and if a learned professor assesses his fee by contract thus, as a teacher, at what amount will the public assess the fee of the taught?

The system is damaging, not only to the interest of the profession in general, but the College also. I believe the students are injured, for how many valuable and interesting cases would the College acquire from the metropolitan practitioner, did they but exist on terms of friendship and esteem, having interests in common, and all working for one common end or object, "the advancement of scientific and practical research combined." A far better prospect for advance than the system of competition! What chance has a graduate, however well educated, against such a collegiate system inside, and the acquisition of all the most choice appointments outside? Surely this can be no inducement for young men of good family to join the profession. And you must offer some fair inducement; for a young man who now embarks in practice has a very uphill road before him, and unless he stoops to associate with groom or coachman, he fails to get support; for his "diploma" does not give him that social status which will warrant him to approach the owners. So, what with higher fees and education, the competition inside and out of the College, a young man of good family should hesitate before he steps into the profession, for the return is quite inadequate as things now are.

However, all this can, by honest effort, be put in order, and then we must see what can be done to stay the opprobrious remarks cast on us, as to our obtaining a sound knowledge of Cattle Pathology—*vide Mark Lane Express*, Monday, June 2nd, under heading "Agriculture in South Hants."

Speaking of the mortality among the sheep and lambs, the heavy loss to the flock owner by this, and gaps in wheat and growing crops, a writer says, "I wish that country doctors went in for the study of animal diseases. The Veterinarians, as a rule, are hopelessly ignorant."

Now what are we to say in reply to such a sweeping remark in an agricultural paper of wide circulation? Our College has no practical course of study; where, then, are the students supposed to acquire it? How the new arrangement will satisfy the examiners and Royal Agricultural Society, time will show; but surely more rational means for obtaining a knowledge of the ox, cow, sheep, and pig, will be discovered, than the perambulation of teacher and taught in a cattle market. Goodness knows what the dealers and drovers will say!

My letter has now exceeded the usual limit, yet it is with reluctance I put down the pen. Before I do so, I would ask your readers to peruse your "Editorial," or leader, in November, 1875, "Journal," between this and next meeting.

During the twenty-five years I have been in the profession, I have seen much improvement, and hope ere I quit it to see the "road" made smooth for those who are to follow me, and that the remark the late Mr. Mavor once made, "that they manufacture Veterinary Surgeons at Camden Town, and then starve them to death by ruinous competition," can never be repeated.

I am, dear sir, yours, etc.,

ROBERT WARD, F.R.C.V.S.

London, W., *June 10th*, 1879.

ON THE DETENTION IN THE UTERUS OF THE ŒSTRAL PRODUCTS IN THE LOWER ANIMALS.

To the Editor of the VETERINARY JOURNAL.

SIR,—I have to thank Mr. MacGillivray for taking up the above subject, which was opened by me. When I did so, I did not intend to appear again upon it, as my experience of this disorder was limited; but as Mr. MacGillivray, in his criticism of my remarks on the case which I recorded in the *May* number of this journal, has misconstrued certain terms, I feel called upon to give an explanation.

The suggestion of scrofula as a cause for the excess of the fluid found in the uterus, in my case, was purely hypothetical, inasmuch as there was no concomitants to warrant such for a certainty.

My employing the term "scrofulous matter" in a rather desultory manner has led Mr. MacGillivray to misinterpret my meaning. By "scrofulous matter," I meant "scrofulous" pus (or pus depending upon a scrofulous cachexia). That the latter may be formed upon a mucous surface without lesions essentially scrofulous, is a fact too well known to require further comment from me.

The mucous membranes of scrofulous subjects are very susceptible to disordered action, and the mucous membrane of the uterus exceptionally so, the slightest cause sometimes producing a purulent discharge. From this, coupled with the character of the contents of the uterus, which were purulent, I was induced to favour the theory of scrofula.

The reason I did not mention the smell of the fluid in my case, was because I did not come into possession of the uterus until three days after the heifer had been slaughtered; and after so long a time, in hot weather, the smell would not be the same as it would have been when taken from the body. But I have a distinct recollection of what it was like, viz., slightly putrefactive, but offensive.

I cannot agree with Mr. MacGillivray that the colour of the fluid in my case is confirmatory of his theory of the earlier periods of menstruation, as the colour is really nothing to go by. If Mr. MacGillivray will review the cases recorded on this subject, he will find that the colour of the fluid is almost as variable as the "shades"; and, indeed, this is compatible with his

own argument, when he asserts that a change takes place in the retained products; this induces an abnormal secretion from the mucous membrane (which is generally much in excess of the œstral products), either dropsical or purulent, and this, in my opinion, is what makes the colour so variable.

I corroborate Mr. MacGillivray's observations as to the character of the œstral products found in the uterus when an animal has been slaughtered whilst rutting; but I never found the quantity amounting to two ounces. This might be accounted for by the animals being slaughtered during the earlier part of that period. As they belonged to a butcher, and had been bought recently, I was unable to learn when they came in heat.—I am, sir, yours respectfully,

GEORGE GRAY.

Bakewell, *June 14th.*

THE PROVISIONING OF MEN AND HORSES DURING WAR.

To the Editor of the VETERINARY JOURNAL.

SIR,—Although England loses considerable quantities of horse-flesh which is suitable for the alimentation of the public, yet well-informed people know perfectly well that in France this flesh is sold and eaten like that of the ox or sheep, and that what can serve as nourishment on this side of the Channel may also be employed in the same way on your side. It think I am entitled to be heard on this point. But what appears to be less known, even in France, is that during war, and on every occasion when necessity demands it, horses, cattle, and even sheep may be *nourished with the flesh of animals* of their own kind. England having at this moment several armies in the field, I believe it will be useful, with a view to diminish the privations and sufferings of men and horses, to make known the following *résumé* of experiments made by M. Laguerrière, a French Military Veterinary Surgeon, during the siege of Metz:—"1. There are occasions when it becomes imperative to utilise the flesh of every animal which has *died* or been *killed*, for the sustenance of horses. 2. The repugnance of the horse to flesh is far from being so great as is generally believed. By a simple preparatory training, in diminishing the ordinary ration, or even in suppressing it altogether for one or two feeds, horses can be rapidly accustomed to a flesh *régime*. 3. Horses perfectly digest either raw or cooked flesh, even with more facility, and especially more completely than they digest vegetable substances. 4. Horses fed on flesh thrive, fatten, and gain in vigour and energy if this substance is given in addition to the ordinary daily ration, or even as a substitute for a large portion of that ration. 5. The flesh may be given raw to a certain number of animals, but it is preferable to cook it completely by boiling it, when it can be given in the form of draught. 6. Cooked or uncooked, the flesh should be very finely divided, reduced to hash, then triturated and mixed with other more or less alimentary substances chiefly destined to serve as a vehicle: leaves of trees, vines, straw, hay, gorse, grains, roots, or any other vegetable productions. When circumstances permit, some common salt should be added. 7. Only a very small quantity of flesh should be given at first, and the allowance should be progressively increased. I have given as much as two and three kilogrammes daily per horse, and then the flesh formed almost exclusively the diet. 8. Certain horses readily eat the flesh-mixture from the hand, and for the majority it is better to employ the *musette*. For others it is preferable to place the mixture on the ground or in the manger, if the latter is present. 9. Several horses at once eat morsels of raw flesh if it is only dusted with bran, flour, or grains, or placed between tree leaves; while later these same animals take the flesh without the slightest preparation. 10. Finally, if horses absolutely refuse the animal *régime*, it will be easy to overcome their

repugnance by drying the *cooked* flesh, reducing it to powder, and making it form part of the composition of prepared bread with salted vegetable substances."

I ought to add to the above, that M. Laguerrière had made numerous experiments before recommending, in cases of extreme necessity, the use of horse or ox-flesh as horse food. I am convinced that in the unfortunate campaign in South Africa, the English army might profit from the preceding observations, and this is my reason for making them known. I am aware that people placed in ordinary conditions will laugh at my proposal to make horse eat horse; but it is not for these persons that I write but for soldiers, and for horses dying from hunger, as I have witnessed them so frequently during war, and especially in the Crimea, Africa, etc., while considerable quantities of horse-flesh were allowed to rot.

Yours most respectfully,

E. DECROIX,

Retired Principal Veterinary Surgeon, French Army.

[We sincerely thank our esteemed colleague for his valuable observations and hints, and urgently recommend them to the notice of Army Veterinary Surgeons and medical men, feeling satisfied that they may be remembered with profit should the circumstances alluded to ever occur in their experience.]

CORRECTIONS AND ANSWERS.

IN Mr. Merrick's paper in the last issue of the Journal, the dose of Chlorate of Potass should be two *drachms*, instead of two *ounces*.

AMATEUR.—The Secretary of the Royal College of Veterinary Surgeons will furnish a Register if you apply for it. In this country no examination or special qualifications are required in order to become a professor, or rather a teacher, at a Veterinary School. In France and Germany it is extremely difficult to obtain the post, and candidates have to give evidence of very exceptional abilities, either by competition or otherwise.

N.B.—We shall have much pleasure in alluding to the subject next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. W. Hill, Wolverhampton; J. Temple, Aberdare; W. Broughton, Leeds; J. R. Dewar, Midmar, Aberdeen; P. Beattie, Turriff, Aberdeen; A. Rutherford, Edinburgh; Dr. Dolan, Halifax; Professor Law, Cornell University; Professor Steel, London; S. Locke, Manchester; G. A. Banham, London; M. E. Decroix, Principal Veterinary Surgeon, France; T. H. Merrick, Kettering; G. Gray, Bakewell; G. R. Dudgeon, Sunderland; D. Hutcheon, Liverpool; Dr. Dolan, Halifax; J. McFadyean, Edinburgh.

BOOKS AND PAMPHLETS: *C. Werner*, Der Lungenrotz des Pferdes; *F. Peters*, Mechanische Untersuchungen an den Gelenken und dem Hufe des Pferdes; *C. S. Roy*, Report on the Pathological History of Epizootic Pleuro-pneumonia; *W. Haase*, Die Mondblindheit; *A. S. Taylor, M.D.*, A Manual of Medical Jurisprudence; *F. N. Otis*, Urethrismus.

JOURNALS: *American Live Stock Journal; Beilage zu den Veröff. des Kaiserl. Deutschen Gesundheit-samtes; Index Medicus; American Veterinary Review; Wochenschrift für Thierheilkunde und Viehzucht; Lo Studente Veterinario; Scientific American; Lancet; British Medical Journal; Journal of the National Agricultural Society of Victoria; Agricultural Gazette; Annales de Méd. Vétérinaire de Bruxelles; Mark Lane Express; Medical Press; Der Thierarzt; Farmer; Recueil de Med. Vétérinaire; Archives Veterinaire; Repertorium Der Thierheilkunde; American Veterinary Review; Deutsche Zeitschrift fur Thiermedicin.*

NEWSPAPERS: *Scotsman; Illustrated Australia; Melbourne Leader; Suffolk and Essex Free Press; Peterborough and Huntingdonshire Standard; Bilston Herald; Irish Times.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

AUGUST, 1879.

THE CASTRATION OF CRYPTORCHID OR CRYPSORCHID HORSES.*

BY C. C. LYFORD, M.D., VETERINARY SURGEON, ROSCOE, CONNECTICUT, UNITED STATES.

BEFORE considering the subject of Castration, I think it only proper to notice briefly the anatomy of the parts with which we have to deal, so that we may the better understand the relations of the fructifying organs, and the situations in which they are to be found.

In the early stage of embryonic life, the testicles make their appearance in the sub-lumbar region of the abdominal cavity, above the peritoneum, and immediately posterior to the kidneys. With the development of the fœtus the testicle acquires sufficient weight to depress the peritoneum, thus allowing it to descend towards the inguinal ring, to which it is guided by the *gubernaculum testis*, and through the intervention of which it is directly connected with the scrotum.

In its normal condition, as it descends into the inguinal canal it acquires several coverings. The first of these, from the inferior layer of the peritoneum, which forms attachments to the testicle in common with the gubernaculum, receives the name of *tunica vaginalis reflexa ;* the second, from the *transversalis abdominis* muscle, is known as the *infundibuliform* fascia; thirdly,

* Read before the Montreal Veterinary Medical Association, 1878-79.

the *cremasteric* muscle and fascia; and lastly, the *inter-columnar fascia*, from the external abdominal. Whereas, in the abdominal variety of cryptorchids, the testicle, not receiving the already-named coverings, has only that obtained from the upper layer of peritoneum, which has received the name of *tunica vaginalis propria*. According to French writers, those animals are called "cryptorchids" whose testicles are not in their normal situation, but are placed in parts abnormal. By the vulgar they are called "originals," "ridglings," or "rigs."

This anomaly appears to have been first described by Oliver de Serres, and it afterwards received attention from a number of veterinary practitioners, particularly D'Arboval, who wrote on the manner of operating when the testicle does not pass the inguinal ring. Nevertheless, it is to the French veterinarians, MM. Goubaux and Follin, that veterinary science is indebted for the most precise notions on cryptorchid horses. In addition to the labours of these authorities, in 1875 M. Degive, clinical professor at the Veterinary School of Cureghem, Brussels, published an excellent memoir on the subject.

The abdominal situation of the testicles results from their arrest in passing into the scrotum. It is known that in certain species of animals the work of descent of the testicle into the scrotum takes place at the moment of birth, while in others—notably the solipeds, whose testicles remain engaged in the inguinal canal many months after birth before they become lodged in the scrotum—the testicles are sometimes arrested in the abdomen, sometimes at the entrance of the inguinal canal, or in that canal.

These different situations of the testicles constitute the various kinds of cryptorchids. This vice of conformation may be met with on one or both sides, and constitutes, as the case may be, the single or the double cryptorchid. But that which is most important to know—especially from a surgical point of view—is the situation of the testicle itself. We shall, after the example of M. Goubaux, divide cryptorchids into two classes. In the first—called "abdominal cryptorchids" by M. Degive—the testicle has not passed the superior orifice of the inguinal canal, and floats in the abdomen. In the second, or "inguinal cryp-

torchid," the testicle has passed entirely or in part into the orifice before-mentioned, and is engaged more or less, as the case may be, in the inguinal canal.

1*st.* *Abdominal Crypsorchia.*—The testicle floats in the abdomen at the extremity of a serous band or cord, analogous to the suspensory ligament of the ovary in the female. It may be connected by adhesions to some part of the wall of the abdomen, or with some of the surrounding organs.

In some very rare cases the vaginal sheath is absent ; or it is at the utmost represented, says M. Degive, by a slight intra-abdominal depression, to which we may give the name of "vaginal fossa." In some cases one ascertains the existence of a rudimentary vaginal sheath which contains part of the epididymus and *gubernaculum testis*, or only a portion of the latter.

2*nd.* *Inguinal Crypsorchia.*—This variety is characterized by the presence of a vaginal sheath more developed than in the preceding case, and in which is found the testicle.

The inguinal testicle generally offers less volume than when it is in its normal situation. At times it is considerably atrophied from granular degenerations. Besides, the semen is profoundly modified, and to such a degree that no spermatozoa are present in it.

However, all crypsorchids are not sterile, as the stallion "La Cloture," notwithstanding his testicles being absent from the scrotum, got colts.

Etiology.—Most authors attribute the testicular displacement to a defect in the size of the testicle and the openings which it has to traverse. Whatever it may be, one thing is certain, and that is that hereditary predisposition plays a large *rôle* in the production of crypsorchis. Thus the stallion "La Cloture" was the son of a monorchid. Moreover, M. Degive, who has operated on thirty-seven cryptorchids, discovered that five at least had been produced by a stallion with one testicle not in the scrotum.

Characters of Crypsorchid Animals.—The signs by which one recognises such animals is obtained from an examination of the scrotal region, of the general character of the animal, and by an examination in exploring the rectum. Thus, the crypsorchid has the character of the entire male horse, shown by

erection of his penis, and all that ardour and impetuosity which is not met with to the same degree in a castrated horse. But before pronouncing upon the existence of the crypsorchid, it is necessary to take into account the age of the subject. In the solipeds the testicles are generally down from the sixth to the tenth month. However, regarding that there have been different opinions held amongst writers on the subject. Thus, Van Haelst advises to wait three years before deciding. M. Degive thinks that, as a general rule, the animal should be regarded as a cryptorchid after two years of age, if the testicles have not appeared in their normal situation. The question of age being laid aside, the absence of cicatrices in the scrotal region evidently indicates the cryptorchid ; and yet their presence does not always permit us to say that the anomaly does not exist, as they may be fraudulently made there. If one has doubts on the subject, it is generally sufficient to put the horse with a mare, when he will most likely conduct himself like a stallion. A further proof is the finding of spermatozoa in the fluid ejaculated by such animals. Exploration by the rectum is especially recommended, as it constitutes an excellent means of diagnosis, while at the same time it makes known to the surgeon the difficulties that may be offered in the castration. In the case of unilateral cryptorchids, the hand in the rectum recognises one of the peritoneal orifices remaining free, while on the opposite side that opening is not to be found ; and besides, one feels the testicle, which at the same time may be made to move by traction with the hand. In a case of this nature, M. Lenglen says that when the testicle is grasped and pressure brought to bear on it, that the animal flinches and shows signs of pain. It is a remarkable fact that the displaced or hidden testicle is generally found on the left side. In thirty-seven cases, M. Degive met with but three in which it was on the right side. In three subjects of the thirty-seven both testicles were absent from the scrotum.

Inconveniences presented by Cryptorchids.—They are passionate, impetuous, yelling—often having an erection ; consequently cannot be put with mares, or worked with them, which renders them useless for certain kinds of labour, and also makes them dangerous. In the stable they try to kick and bite their

neighbours, and at times are very vicious, injuring those who attend on them. Besides, they are not docile as a rule. This being the case, it is necessary to submit such animals to the operation of emasculation ; and this all the more as the results obtained by M. Degive of Brussels, and by a Belgian veterinarian, have been very favourable to the operation. Thus M. Degive reports that in thirty-seven operations only four died, the remaining thirty-three being successful, although twenty-nine of them presented the abdominal variety.

Before operating, Degive keeps the crypsorchid eight days on a spare diet, giving him daily a dose of tincture of arnica in the morning in a small quantity of cold water ; and to this medicine he attributes the absence of Peritonitis after the operation.

OPERATION.—The different methods are distinguished according to the case—whether it is an abdominal or inguinal cryptorchid.

A. *Inguinal variety of Crypsorchis.*—This operation was first described by Hurtrel d'Arboval, next by Van Haelst. The operation is divided into two principal stages, the horse being cast in the ordinary way. 1*st Stage.*—The incision through the scrotum and vaginal sheath is made as in ordinary castration. Divide the layer of yellow fibrous tissue and dartos which extends over this region of the groin. Then dissect the vaginal sheath, and introduce the hand, tearing through the tissues with the fingers. When the sheath has been sufficiently dilated, says the above author, we can sometimes push the finger high enough to grasp the testicle and hold it, whilst we cut to it as in ordinary castration. If the testicle is too deeply situated to be seized by the fingers, we may have recourse to a pair of forceps to hold the organ while it is being removed by means of the écraseur. *2nd Stage.*—The vaginal sheath being opened, the testicle appears more or less in view, and can be removed either by the écraseur, the actual cautery, by torsion, or by clams.

M. Degive recommends the first-mentioned method of removal.

B. CASTRATION OF ABDOMINAL VARIETY OF CRYPTORCHIDS BY PERFORATION OF THE INGUINAL PASSAGE.—This mode is the one which appears to present the best chance of suc-

cess. According to M. Degive, it has for a long time been practised by the Flemish castrators ; and Van Seymostier asserts that it gives the most satisfactory results. Moreover, M. Degive thinks that the proportion of successful operations on cryptorchids may be as large as that in ordinary castration. To operate with ease, cast the animal on his back, and have the four extremities well flexed against the trunk, fixing them two and two, by means of a solid ring level with and behind each elbow, fastened by strong cords embracing the superior and lateral regions of the breast, and a little behind the withers. To keep the animal on his back, place on each side of him some bundles of straw. In this position the operator can introduce his hand into the inguinal canal, without being seriously inconvenienced by the muscular contractions of the animal.

Operation for Abdominal variety.—Incise the scrotum in the ordinary manner ; then open the external inguinal ring, and tear with the fingers the loose and abundant connective tissue which covers the inferior orifice of the inguinal canal. "We know," says M. Degive, "that our object is attained when the hand can be carried with ease through the ring, in which it is well to feel the internal commisure of the prepubic tendon of the abdominal muscles. One should avoid, during this manipulation, the forming of useless *culs-de-sac* in one or the other direction, and especially towards the anterior parts, as inflammatory products may accumulate and produce unpleasant consequences."

The operator should then perforate the inguinal canal. To do this, he places himself behind the animal, then with the left hand, for example, he opens the inguinal canal. He must be careful to open the proper passage, pushing with slowness in the right direction, communicating to the hand from time to time an easy, rotating movement. Thanks to pressure, combined with the rotatory movement, the hand opens a passage through the inguinal canal, and at last arrives at the peritoneum, at which he will be able to feel the bowels. The operator tears through this last layer by making pressure on it with one of the fingers, afterwards enlarging the orifice made by passing the other fingers through it, so that the hand, or part of it, may be introduced into the abdomen.

Two principal difficulties may present themselves during these manœuvres—1st, the natural resistance of the inguinal ring; 2nd, the compression resulting from the contractions of the abdominal muscles and the muscles of the hind extremity. They may be overcome if one operates slowly. M. Degive confesses that in one case he made a false passage from his hand becoming fatigued; this killed the animal, owing to the intestines becoming inflamed. Since then he has had in some cases to suspend operating and rest the fatigued hand, and very frequently he has had to remove the hand from the inguinal canal, or from the abdominal cavity.

To facilitate the introduction of the hand into the parts, it should be well lubricated with olive oil, and made cone-shaped. Some recommend the hand being moistened with tincture of arnica.

2nd Stage. Prehension of the Testicle.—In the majority of cases, it is sufficient to introduce three fingers through the peritoneal opening in order to seize the testicle or part of the epididymus. In difficult cases it is the cord that serves as a guide to arrive at the testicle or the tail of the epididymus. When the hand grasps one of these, it draws it out by a slow and continued traction. If it pulls upon the epididymus alone, the testicle soon follows and appears at the external orifice of the inguinal canal.

3rd Stage. Ablation of the Testicle.—The testicle may be removed by any of the various methods in general use. But that which is by all means preferable and most commonly adopted, is by the écraseur.

From contributions by French and German authors, this operation seems by no means of recent adoption, though not in general use either by French or German practitioners; while to English authors it seems to be almost, if not quite, unknown—even the situations in which the testicle may be found are not alluded to; and cryptorchids in general practice have been considered almost, if not entirely, beyond interference, especially so far as immediate operating is concerned, although various means have been resorted to in endeavouring to bring down the hidden testicle. Amongst the most humane of these in general use is that of changing the bearings of the hind feet, and—less so—blister-

ing the groin and smoking the animal's head nearly to suffocation. As to the efficacy of such measures, I will allow you to judge.

I am sorry to say that it seems to be a failing of our best English authorities not to have considered the operation of due value to be worthy the attention it is deserving; though whether this may have been from lack of interest or fear of impropriety, I will not attempt to say.

In this place I consider it only proper to speak of the by no means recent adoption and most successful practice of this operation by "Farmer Miles," of Illinois, U.S. Mr. Miles commenced castrating cryptorchids more than twenty-five years ago, though he can scarcely be said to have followed it as a business for more than ten or twelve years, during which time he has castrated from one hundred to two hundred and fifty every year, with a mortality not exceeding three per cent. This, as you see, is an exceptionally small percentage, even for ordinary castration.

I consider his success to be greatly due to his mode of casting and securing the animals, and cannot too strongly recommend you all to see this method at your earliest convenience.

The advantages which to me seem to recommend this method of securing are three in number—

(1.) Diminished risk in casting;

(2.) The easy posture in which the animal is retained;

(3.) The facilities afforded the operator.

Of these, the first, by the ordinary modes of casting, involves more or less danger to the animal—but this depends greatly on the way he is allowed to fall. By Mr. Miles' method danger is obviated, as it prevents all floundering, and instead of the animal falling on his side, shoulder or neck, he is made to sit on his haunches, and then to roll over on his side.

The easy posture depends on securing the limbs separately, and in a flexed position, thus preventing all muscular cramps, admitting of no leverage, and so allowing of no injury.

The advantages afforded the operator are—1stly. That he need be in no haste, as the animal being secured in so nearly the natural position of lying, no great amount of inconvenience is inflicted upon him, even if retained for hours; 2ndly. By means

of the "spreader" the hind-legs are kept apart, thus giving sufficient room, besides preventing the inconvenience referred to by M. Degive—"That of compression resulting from contractions, mainly of the muscles of the hind extremities;" and in addition it leaves the inguinal canal free for the passage of the hand, and affords a more easy and convenient receptacle for the testicle.

In securing and removing the testicle Mr. Miles' method does not differ materially from that of M. Degive, except that he seldom finds it necessary to pass his hand within the abdominal cavity, unless there be some abnormal enlargement, or adhesions of the testicle to the neighbouring parts. Of the former, the specimen before you is an example of encysted hydrocele, which I witnessed Mr. Miles remove during the summer of 1876. Discovering the testicle to be uncommonly large, and finding that he could not remove it by traction on the cord with the left hand in the inguinal canal, he endeavoured to assist by pressure from above with the right hand in rectum, but as the testicle was too large to pass the inguinal ring, and having decided that it contained fluid, he passed a trocar through the inguinal canal and drew off three pints of fluid, after which the testicle descended easily and was removed by the écraseur.

Of the adherent variety, I have met with but one case, and in this the testicle was apparently attached to the ilio-lumbar aponeurosis, close to the external iliac artery. With the right hand in the rectum, and the left hand within the inguinal ring, I succeeded, after about thirty minutes' manipulating, in bringing the testicle into the inguinal canal; but I was obliged to pass the écraseur well into the canal, as the adhesions would not allow of the testicles descending as far as the scrotum.

The after-treatment of the animal consists in keeping the wound well open, and allowing sufficient exercise. Mr. Miles prefers that the animal should be kept at his usual work, thus ensuring exercise, besides preventing union of the parts too early, and obtaining free drainage.

OSTEO-POROSIS OCCURRING AMONG PONIES IN MINES.

BY W. WOODS, F.R.C.V.S., WIGAN.

I YESTERDAY (June 15th) forwarded to the Brown Institution the limb of an aged grey pony, which I had destroyed on the previous day. The following is the history of the case:—The animal, a pit pony, suddenly exhibited symptoms of excessive lameness while at work. She was with difficulty walked to her stable—a distance of about 400 yards—and I was then requested to see her. On my arrival I found the following symptoms: She was lying on her side, breathing quickly, and perspiring. The pulse was eighty per minute and hard. When compelled to arise—a difficult matter—she exhibited indications of Laminitis affecting all of the feet; but, unlike animals suffering from that disease in its early stage, this pony could not remain standing for longer than a minute at a time. The bowels were constipated throughout the attack, and there was almost complete suppression of urine. After three days' medical treatment the animal was destroyed, as ultimate recovery was considered impossible, both knees being in the same condition, and the perforans tendon of one hind limb was separated from its attachment to the os pedis, this being caused by the creature endeavouring to stand.

I would not have troubled you with this case, but I have had seven or eight others belonging to the same firm (the Wigan Coal and Iron Company) in a similar condition—some with the perforans tendon torn away from the os pedis in two, or even three feet; the animals in each case walked on the fetlock pad. The subcutaneous connective tissue of the limbs is highly inflamed, and the ligaments and tendons appear to be partially split up into shreds.

I may state that all the ponies, with one exception, have been foreign ones; but most of them have been at work in the coal-pits for several years—one, a very severe case, had been more than ten years in the same mine. The ordinary food is oats, beans, bran, a liberal quantity of Indian corn and hay—all of the very best quality. The same kind of provender is supplied to

upwards of 200 horses and ponies ; but I have had no cases like the above except in the mines.

The patients were in every instance in good working condition. They were always suddenly attacked, and usually within an hour after commencing their daily work. Several slight cases, which were at once brought out of the pits, recovered. They were put in loose boxes at the farm, and treated with a mild laxative (Ol. lini), followed by mineral tonics and chlorate of potass dissolved in the drinking water. Mashes and grass were given as food.

For two years I have had similar cases occurring about May or June in ponies belonging to the same firm, and two cases belonging to another firm several miles distant. Can you suggest the cause of the disease? Is it the Indian corn being given in too great quantities? The water appears to be good, but it is now in the hands of the analyst. Any particulars I have not mentioned I shall be glad to forward, as I am anxious to know if any preventive measures can be adopted.

[Mr. Banham, M.R.C.V.S., after examining the specimen soon after its arrival, states that he discovered great subcutaneous inflammation, with swelling, gelatinous infiltration, and blood extravasations in the connective tissue, extending from the foot to above the knee. When the skin was removed, it was found that the extensor tendons (magnus and obliquus), as well as the internal ligaments of the carpus, had broken away from their attachments to the bones. The cartilages covering the metacarpals, as well as those on the lower tier of the carpal bones, were also rough and commencing to ulcerate. The suspensory ligament (superior sesamoid) also appeared to be affected, although it had not given way at its attachment; though, if the animal had lived, it would probably have become detached. Mr. Duguid inspected the specimen, and concluded it was analogous to what the late Professor Varnell described as Osteo-porosis, the "big head" of the Americans ; but this will be easier decided when the bones are macerated. It would also be advisable to ascertain whether any of the other bones were affected.

In reply to our opinion and inquiries, Mr. Woods replies :—"I am quite aware that foreign ponies are not so dense in their

fibrous tissues as our own, and I quite agree with Mr. Duguid that the cases are those of Osteo-porosis; but, in my opinion, they are not quite like those recorded by Professor Varnell, as both sexes were equally affected, and one pony was at least twelve years old, and had been at work in the mine for seven or eight years. I have forwarded you half of lower jaw and portion of pelvis, which, I believe, belong to the same pony as the leg already sent. I think you will come to the same conclusion that I have—that they are cases of Osteo-porosis; but it appears singular to me that the ponies should look, work, and feed well up to the time the ligamentous attachments give way. The disease made its appearance last year, as well as in this, immediately after the Whitweek holidays. This year I took the precaution of having the ponies exercised every day."

No pathological change was discovered in the other bones sent for inspection.

The disease is in all likelihood due to some infraction of the laws of hygiene. We could certainly recommend that but little maize be given, and on rest days less stimulating food than is allowed on working days.]

THE ATMOSPHERIC CAUSE OF DISEASE.—IS OZONE A CAUSE?

BY ROBERT WARD, F.R.C.V.S., LONDON.

THE reason why I have selected Ozone for the subject of my thesis is because I have been somewhat interested with a lecture delivered to the members of the Kingscote Agricultural Society, at the Hunters' Hall, Kingscote, in the month of February last, by Professor Mayer, of the Cirencester Agricultural College. Professor Mayer proceeds, firstly, to discuss the influence certain conditions of the atmosphere have on animal and vegetable life; then the importance to be attached to oxygen, not only as a supporter of all living organisms, but from the grand part it plays as Nature's *scavenger*, rendering inert noxious compounds, changing them to their original elements, or rendering them innocuous. From this he proceeds to describe Ozone,

and to explain the derivation of the term.* After alluding to its production by artificial means, he proceeds to account for its presence in the atmosphere; then the means employed to test its presence. I simply mention all this to show that he went into the subject with some earnestness and detail; thus to attract the attention of, and lead his audience to follow him. But as I proceed with his lecture I am compelled to halt; indeed, I was somewhat surprised when I came to the conclusion he had arrived at, as the result of certain experiments instituted by Dr. Day. The Professor states:—"I think it safe to assert that many of the epidemic (*epizoötic?*) diseases which affect our domesticated animals at certain seasons, such as Catarrh, Bronchitis, and Pleuro-pneumonia, may be attributed to an excess of Ozone in the atmosphere."

To substantiate his deduction, he then proceeds to state the observations of Dr. Moffat during particular conditions of the atmosphere, in which phosphorescences and the presence of Ozone were observed; then cases of Apoplexy, Epilepsy, sudden death, Neuralgia, and premature uterine action (abortion) occurred.

It has always been maintained that Ozone—that is, true atmospheric Ozone—is not deleterious to health, but the very opposite. Take our sailors, for instance, who are of all men most exposed to an ozoniferous atmosphere, and they must meet with it in all its forms of excess. Their health does not appear to be deteriorated, but, on the other hand, augmented; they are tough, sinewy, and tanned.

In his recent excellent treatise on "Ozone and Autozone," Dr. Fox says, referring to the observations of Dr. Moffat:—"It is not necessary to ascribe the advent of these calamities to an increase of Ozone, for a sudden decrease in the barometic pressure is sufficient to account for the Apoplexy and sudden death. Moreover, healthy people of highly nervous temperaments are often sensible of a diminished pressure of air by toothache, pains in the joints, and other nervous symptoms."

The theory set forth by Professor Mayer is met by the conclu-

* Ὄξη, a stench; or Ὄξω, I smell.

sions of Dr. Fox, respecting diseases in man and animals, and requires data more reliable than the Professor furnishes us with to establish it. For on this subject Dr. Fox says :—"Firstly, a deficiency of Ozone in the air in all probability predisposes to diseases, particularly of the epidemic form, by virtue of the depressing and debilitating effects of such air, in consequence of its feeble power of oxidizing animal *débris ;* and, secondly, a permanent diminution of the normal amount of active oxygen probably favours the development of chronic diseases, characterised by mal-nutrition, imperfect oxidation, and degeneration of tissue."

From this we may infer that a deficiency of Ozone is deleterious to health, according to Dr. Fox's conclusions ; and that an excess of Ozone, according to Professor Mayer, is also deleterious.

Against the Professor's theory we have the following from Dr. Fox :—"The evidence in favour of the supposed connection between Influenza and an excess of atmospheric Ozone is far from being decisive ; for this disease is sometimes prevalent during periods when Ozone is not observed in excess."

Again, Dr. Richardson says on this point :—"We must yield that Ozone in excess, as we produce it in the laboratory, induces certain symptoms of disease ; but as yet we know of *no instance* in which an excess sufficient to produce the same symptoms exists in nature."

An air so charged as to produce the particular symptoms enumerated, would require no test to prove the presence of Ozone, for it would be an *irrespirable* air, and would affect with varying intensity all who breathe it. It is most remarkable that Ozone has a different influence on various animals. Mice, it appears, are destroyed if the air be impregnated with even the $\frac{1}{6,000}$ part of it ; rats are affected before guinea-pigs, and these before rabbits. On the other hand, birds appear to tolerate a highly-ozonized atmosphere; frogs, if supplied with water, any amount.

Dr. Ireland remarked in the hospital at Umballa, Bengal, that a sudden decrease in Ozone was followed by a threefold increase in the number of patients, and by the *prevalence* of Rheumatism

and Influenza ; and that, when there was an increase of ozonic reaction, the patients recovered.

It has been remarked by Mr. Harris, of Worthing, that during the prevalence of N.E. and E. winds, when no Ozone is present in the air, there was greater frequency of irritative affections of the mucous membranes of the throat and air-passages.

In the Island of Skye, Catarrh is never observed ; yet Ozone is most abundant there. And in answer to the question, " Is there any reason for thinking that atmospheric air ever contains Ozone enough to produce catarrhal symptoms ? " Dr. Fox says :— " Although many observers, such as Scoutetten, Wood, Richardson, and myself, have experimented in the laboratory and experienced these symptoms when the air has contained an excess of Ozone, yet no such effects are produced amongst those who breathe it freely diluted with air, when the odour is notwithstanding distinctly perceptible."

Professor Mayer, in his lecture, I take it, referred to atmospheric Ozone, and its influence on animals ; therefore I have endeavoured, as simply and plainly as possible, to place before your readers the opinions of authors who have made this subject their special study, in order to prove that Ozone is not held to be such an atmospheric cause of disease as Professor Mayer was led to infer at Kingscote.

Dr. Fox says :—" Science does not at present enable us, unfortunately, to make any positive statement as to what is, or is not, an unhealthy atmosphere."

Believing, however, that Ozone is vital air *plus* force, that it decomposes some of the offensive and deleterious products of putrefaction, and that it exists naturally in the air we breathe, we may justifiably *infer* that an impairment of the active power of the air, in consequence of the " consumption " of its Ozone, may contribute largely to the formation of an unhealthy atmosphere.

Ozone has been termed Nature's grand disinfectant, because it removes noxious odours, and *must therefore arrest infection and destroy pestilential miasmata, also germs of all epidemic diseases.* But we are not certain of this, or rather that Ozone does possess the power of oxidizing either such vitalized matter or the *materies morbi* of any affection.

Where Ozone abounds there we find a pure invigorating air—at the seaside, on the moors, on the mountain, or on the ocean; there we find men and animals cheerful, their appearance most healthy, a skin rosy or tanned from exposure, whilst the only diseases met with are those of a sthenic form.

The study of Ozone is now one of deep interest in the medical world, and must be equally so to the modern veterinarian. But in order that this study bear fruit, facts must be accepted before hypothesis.

OBSTRUCTION OF THE INTESTINE, DUE TO ACCUMULATION OF FAT AND MUSCULAR DEGENERATION.

BY J. W. HILL, F.R.C.V.S., WOLVERHAMPTON.

On June 2nd we received a message to proceed to Endon, the seat of J. Pritchard, Esq., to examine a fat heifer which was being got up for show, and which had lately taken to "straining"; at the same time "her bowels were open, and when straining, a bloody discharge came away." Proceeding to Endon on the same day, I found the heifer—a three-years-old Hereford—apparently in perfect health, but every few minutes she strained and passed a small quantity of fæculent matter of a normal character. She was enormously fat, so much so that the anus and vulva were scarcely perceptible. I suggested an examination *per rectum*, and immediately carried it out. I was able to introduce my hand about twelve inches, when I found the passage suddenly constricted to such an extent that I could scarcely pass two fingers. This confirmed to some extent the opinion I had given, that probably the bowel was "growing up," which the veterinary surgeon who had previously attended her had assured him was not so. Such being the case, the bailiff thought it better not to run the risk of keeping her until Christmas, he having had a similar case before; but until some decision was arrived at, I prescribed chlorodyne mixture to allay the straining, and ordered a pint of linseed oil to be given three times a week, as well as laxative food, strictly prohibiting anything in the way of diet which had a constipating tendency.

On June 6th I saw the animal again, and her condition was much the same. I was told a butcher had been communicated with. On the 12th I saw her slaughtered, and on examination the parts affected presented a most unusual appearance. I have forwarded forty inches of the bowel adjoining the anus. You will observe that the whole of it is surrounded by an immense layer of solid fat, and between this and the intestine is a dense grey substance, one-eighth of an inch in thickness, running the entire length. The stricture commences twelve inches from the anus, and for thirty-six inches is continued—in one or two places scarcely admitting the little finger; the mucous membrane is inflamed, more so in some parts than in others. The mass of bowel sent weighs twenty pounds. Whether it is a case of fatty degeneration, fibrous stricture, or cancer, you will be able to determine. I am at present inclined to believe it is the two former combined, but three medical men lean to the latter. I have since learned that the heifer had been home-fed since she was a calf, and that her age was about three years when she was slaughtered; she had never been unwell before, but her grandsire died about four years ago from the same morbid condition.

[Dr. Thin made a careful microscopical examination of two small portions of the morbid specimen above alluded to, and reports that the mass between the peritoneal and muscular coats of the bowel is simply fat; the muscular layer, mucosa and epithelium, being healthy. He adds: "I suppose it is correct to speak of such a mass as a 'tumour,' although it was not encapsulated. It is certainly safe to call it 'growth.'"]

PNEUMO-ENTERITIS CONTAGIOSA (SWINE PLAGUE).

BY W. DAY, JUNR., M.R.C.V.S., VETERINARY INSPECTOR, WARMINSTER, AND J. R. LEESON, M.B., M.C., M.R.C.S., LATE DEMONSTRATOR OF ANATOMY, ST. THOMAS' HOSPITAL, LONDON.

AT the present time, when the so-called "Pig Typhoid" is so very prevalent, and much controversy and diversity of opinion exist in reference to this disease, especially as to its being analogous to human Typhoid (hence the popular, but, to my thinking, erroneous name), I thought it might be interesting to some of

the members of the veterinary profession to give an outline of a few of the cases which have recently come under my supervision in the capacity of veterinary inspector. In these cases I have been aided by Dr. Leeson, who was staying with me at the time, and at my request accompanied me; and we together made careful *post-mortem* examinations on each case, from which he has taken the subjoined notes.

Eight pigs were purchased by a farmer, at a neighbouring market, and taken by a dealer of this town (Warminster) with some of his own to Frome market, where they were not disposed of; but instead of returning home direct, they were kept from Thursday, the 19th of June, to Saturday, the 21st, in one of his sties, where pigs had been condemned for this disease some few weeks previously. From the farmer's statement, it appears that on Monday the 23rd, they showed signs of illness—loss of appetite, etc.—from which they partially recovered, and appeared better until the end of the week, when the symptoms increased in four of them, and on Monday, the 7th of July, the other four which appeared to be well were removed to another sty. On Wednesday one of the four affected ones died, and the case was reported to me. On my arrival, the pig that was dead exhibited externally the usual signs of this disease, viz., the peculiar patchy purple discoloration of the skin on the abdomen, inside the thighs, under the throat, and back of the ears. The three pigs on being disturbed from the litter on which they were lying, showed unmistakable symptoms in their staggering gait, arched backs, cough, laborious breathing, etc. On examination the abdomen and thighs of two of them were spotted, and one ulcerated; but the other did not show these external symptoms. I certified as to the disease, and they were slaughtered by order of the Executive Committee. The following *post-mortem* notes will show the ravages of this disease in each case. In one case in which the other animal had been dead twenty-eight hours before the *post-mortem* examination, there was no *Rigor mortis*. The others being examined immediately after they were killed, and then buried whilst warm, there was no opportunity to note the degree or time at which *Rigor mortis* would have occurred.

Skin.—Hair rough, and coat generally somewhat "staring." The belly, inner side of thighs, and the ears, presented in three

of the cases numerous hæmorrhagic patches, mostly about the size of a split pea; and in two of them large irregular blotches, of a purple colour. In one case the skin covering the hæmorrhage had ulcerated, and exuded a thin serum. There were none of the "rose-coloured" spots seen which have been described by other observers: in fact, all the abnormal appearances presented by the skin were referable to the changes produced, both in colour and otherwise, by the extravasated blood. On opening the abdominal cavity the same appearances were seen, although to a less marked extent. Numerous subperitoneal hæmorrhages generally about the size of a millet seed, but frequently much smaller, often being only mere specks, were seen on the posterior surface of the diaphragm, inner surface of the abdominal walls, and on the colon. In two cases, a small amount of lymph was found in the peritoneal cavity, but there was very little effusion, and no signs of general Peritonitis. On opening the intestinal canal, it presented well-marked appearances of Enteritis, commencing in the lower part of the ileum, being very marked about the ileo-cæcal valve (in one case the swelling being so great as almost to close the opening), but having its chief situation throughout the colon, the mucous membrane of which was highly injected and swollen, being sprinkled over with numerous petechiæ. In two instances, in the lower half of the colon, several sub-mucous hæmorrhage were found, varying in size from a split bean to that of a filbert. There was an excess of mucus. No ulcerations were seen, but had the animals lived, the mucous membrane covering the large blood patches would probably in three or four days have broken down, leaving ulcerating surfaces. There was no "diphtheritic exudation" seen. The bowels were filled with rather firm and consistent fæces; but in one case the fæces were fluid, and of a yellowish colour. The rectum was less affected, so that the chief stress of the intestinal affection fell upon the upper part of the colon, and was most marked in its upper three-fourths.

Spleen.—In all cases the spleen appeared normal, not resembling, in the slightest degree, the state of that organ so commonly found in human Typhoid and other fevers.

Liver.—In three cases this was quite normal, in the fourth it was congested, and its substance friable.

Kidneys.—These were in all cases free from any pathological changes observable by the naked eye, though their cortex was somewhat pale.

Supra-renal capsules healthy.

Pancreas appeared healthy.

Pericardium contained in all cases brownish fluid, its serous lining being sprinkled with sub-serous hæmorrhages.

Heart.—Was pale and flabby, and free from hæmorrhagic spots.

The Pleuræ contained, in three cases, a small amount of brownish fluid; in one case there were numerous recent adhesions; in two cases the surface of the lungs was covered towards their lower parts by recent lymph; in the fourth case the pleuræ appeared healthy. In three of the cases the lungs presented, in their lower third, well-marked signs of Broncho-Lobular Pneumonia; the substance of the lung sinking in water, being grey and dense; on section the lung substance was grey and mottled, but no casts of the tubes could be squeezed out of the inflamed areas. The upper parts of the lungs were somewhat emphysematous. The bronchi were filled with tenacious mucus. In the fourth case, the lung affection was very slight, but there were indications of commencing Lobular Pneumonia toward their lower margins. The muscles were pale and flabby, and did not show any patches of hæmorrhage.

Remarks.—From the above it will be seen that the stress of the disease fell chiefly upon the lungs, the pig which died certainly succumbed to his lung affection, and not to that of the intestines. And, no doubt, had the remainder been allowed to live, they also would have died from the same cause.

Dr. Leeson states that the hæmorrhages both in the skin and under the mucous membranes, reminded him of Hæmorrhagic Small Pox and Scarlet Fever; and the *post-mortem* appearances in no way resemble those of human Typhoid. I entirely agree with him in thinking the sooner the name of "Typhoid" is dropped in connection with this disease the better, as it is misleading in every way; and that in future it would be desirable to adhere to that of "Pneumo-Enteritis-Contagiosa," which has been given to it by Dr. Klein, and which exactly describes the disease as witnessed in our cases.

ON HÆMORRHAGE AFTER CASTRATION.

BY A. E. MACGILLIVRAY, V.S., BANFF, N.B.

THE evidence in the recent great trial, Smith *v.* Marking, having brought the above topic rather prominently before the profession and general public, I intend, with the editor's permission, giving the substance of my experience as to the same.

Hæmorrhage after castration, as every practical professional man will allow, is one of the most aggravating and disagreeable sequelæ of this important operation. Just when one thinks the operation well over, the *gelding* having but got on to his legs, and is in the act of being led away, some onlooker remarks, "He is bleeding awfully!" This is of course, in general, a mere bagatelle, and may happen at any time; the colt is ordered five or ten minutes' travelling exercise before being housed up, and almost invariably one hears no more of bleeding.

But it sometimes *will* happen that the hæmorrhage persists, not only drop by drop, but actually goes on in continual small streams; or it may cease for two or three minutes, and then come away with a gush, and go on thus off and on for hours. This is simply terrible to the operator, and as for the owner—he, poor man, is in despair!

Generally the chief question now is, What is to be done? Plugging, stitching, pressure—or what? My own plan is to endeavour to ascertain where the hæmorrhage is coming from. Is it simply from the wound, or is it from some part of the recently divided internal structures? If the hæmorrhage is merely from the wound—which will at times happen—all that is necessary is to pin up the incision for a few hours; or draw the scrotum into a purse, as it were, pulling it well down, and tie a piece of soft string on it, above the incisions, leaving this (ligature?) on for some three hours, but not longer. I feel bound to say, however, that it is very seldom one will find hæmorrhage from the wounds in the scrotum. I have only met with it four times in fifteen years, and in only one case was it anything like serious. The animal was a strong colt, so I threw him over and stitched up the wound, and all was well. No bagging of the scrotum followed, thus proving that the hæmorrhage was not

internal. The stitches were removed in twelve hours, and all came right.

When the hæmorrhage is taking place internally, however, my opinion is that the animal ought to be thrown over immediately, and search made inside to discover, if possible, where the defective point is. It will usually be found quite an easy matter to lay hold of the recently divided inside structures—membranes, *vas deferens*, and even the vascular cord; so that the *exact* origin of the hæmorrhage may at once be seen and effectually dealt with, either by ligature or torsion. I have done it both ways. This is far more professional-like than plugging up the scrotum and superjacent canal with tow or cotton to stop hæmorrhage from —*you don't know what!*

I have, however, used the plug in two different cases, and they both successfully issued from the operation, the plugging material being removed within twenty-four hours. I would never think of doing so now, however, since the end can be accomplished in a far more refined and natural manner.

I shall here take the liberty of quoting a rather remarkable case to show the practicability of my remarks. In the month of May, 1878, I went along with two professional friends on a tour of castrations, so to speak. I operated on five one-year-old colts, belonging to three of my own clients, the first thing in the morning. I then drove a few miles to a farm where there were five castrated by my two friends. Well, the first colt operated on bled severely, and continued doing so till other two were castrated. I then drew their attention to the excessive hæmorrhage, and advised them to throw the colt immediately. This was done; the divided membranes were laid hold of and pulled out, and a small thread of an artery was found jetting away from same. I remarked that it was too small to account for the immense hæmorrhage I had seen; but they thought it was quite enough, and seeing nothing else, they put a ligature on same, and again let up the colt. No improvement, however; hæmorrhage as severe as before. Allowed him to stand for another half hour, and then threw him once more; this time the divided end of vascular cord was, after much difficulty, got hold of, and the secret was out—the cord was wounded about an inch above the *torsioned*

end, and the blood was escaping in a strong jet as thick as a slate pencil! This was at once secured, and the poor colt set at liberty. He came all right, *after being walked home three miles the same night.*

In this case the operation was by torsion; but the operator, after slitting out the testicle, thought the opening in the divided membranes too small, so pulling the testicle well out, he dissected the membranes for a little way down the side of the vascular cord, and in so doing had wounded the latter, and hence the hæmorrhage.

Since adopting my present plan of castration by torsion (this is my third season) I have had no hæmorrhages to deal with, and now scarcely dread any. For twelve years I operated by searing the previously divided end of the vascular cord with the hot iron, and I was sometimes bothered with hæmorrhage; and I believe all castrators by actual cautery have much the same experience, *vide* article by Mr. Fleming in last Journal.

The operation by torsion is extremely simple, successful, now widely adopted, and quite up to the high recommendation given it by Professor Williams in his "Veterinary Surgery." In my humble opinion, however, a good number of castrators by torsion use the knife rather freely, and so lead themselves into uncalled-for hæmorrhage. In operating I merely use the knife to slit out the testicle, then apply the steel clam above the epididymis, and pass the knife through a very small portion of the non-vascular cord, not incising the *vas deferens*, which I grasp in the torsion forceps along with what is known as the vascular cord. It is a great mistake, and the cause of much hæmorrhage, to cut too deeply into the so-called non-vascular part of cord; or, in other words, to go too near the vascular cord with your knife; a very small incision at the extremity of the non-vascular cord is all that is wanted.

In the month of September last I met my friend Mr. Cooper, V.S., Fordyce, at a farm some twelve miles from here, to assist in castrating by torsion a five-year-old horse, a three-year-old, and a two-year-old; and we resolved, on castrating the latter, to make only the one incision, allowing the testicle to pop out, so that in applying the torsion

forceps we grasped the vascular and non-vascular portions of the cord alike, twisted the whole off, and the colt made a grand recovery! Here one would suppose there could have been no hæmorrhage, and there was none! Since then I have operated on one or two very small pony colts after the same fashion, and I believe Mr. Cooper has done so too, and all have done well. Let operators who fear hæmorrhage give this method a trial.

I believe that, as Mr. Fleming says, the *écraseur* is a very safe instrument to castrate with; but I maintain that he who has a good set of torsion tools, steel-toothed clam and forceps, need not care where or what he castrates if he perform in a careful and proper manner. I have used for the last two seasons a set of excellent instruments, clam and forceps, made by Mr. James Anderson, Fife, Keith, and slightly differing from those advertised by him in the VETERINARY JOURNAL, in so far as mine have not the "spring and ratchet," and have simply a screw on each, which I consider preferable and far more secure. I have got the same kind made by Mr. Anderson for three of my professional neighbours, and they all express themselves delighted with the "screw plan."

In conclusion I may, perhaps, be allowed to refer to one cause of hæmorrhage after castration, which I am certain is not generally known, and in cases where it happens, may not even be suspected; and that is the fact that the animals operated on sometimes *bite and pull at the wounds in the scrotum with their teeth!* My friends, Messrs. Gunn and Cooper, both give me details of cases of this kind occurring in their practice; while I have myself met with one most inveterate case of tearing the scrotal incisions with the teeth in a small pony colt. In this case I had to fasten up the wounds three different times, the colt persisting in tearing them open. After the third fastening up and securing of wounds, I took the precaution of also completely securing the little fellow, so that he could turn round to neither side, nor move backwards nor forwards. I left him so for twelve hours, by which time, after so much tearing, etc., the scrotum was so much inflamed and swollen that he desisted from touching it. He made a good recovery.

Editorial.

GLANDERS AND FARCY AMONG HORSES IN THE METROPOLIS.

THERE can now be no doubt that Glanders and Farcy prevail to a serious extent in the metropolis, and that the measures devised to suppress them are so far ineffective as to be almost valueless. The frequency of prosecutions for working Glandered horses, and the deaths reported to occur among people from the loathsome disease, as well as the revelations published with regard to certain West-end mews, reveal a state of affairs which is anything but satisfactory, and to remedy which some other measures must be adopted than those which are now, somewhat perfunctorily it must be confessed, carried out. This is a subject to which we have frequently alluded, and it is one which, we fear, will need further allusion before our views are adopted and the malady brought under control. It is well known to many veterinary surgeons in London that only a very small proportion of the cases of Glanders known to them are reported to the authorities ; indeed, it can scarcely be denied that those reported have been only accidentally discovered by the police. From what has recently transpired, it would appear that there is a kind of trade going on in Glandered horses among unscrupulous persons ; that diseased horses are worked in cabs and other vehicles, but chiefly by night, when detection is difficult, if not impossible ; and that there are knackers in London who are unlicensed, and therefore are tolerably safe from inspection.

The system upon which Glanders is attempted to be suppressed or checked in the metropolis and other cities and towns throughout the country can never be a successful one. The police are incompetent to act as inspectors or to diagnose the presence of the malady, and veterinary surgeons should be specially detailed for this purpose by the police authorities ; knackers, so far as we can learn, do not report to the authorities their receiving diseased animals, much less from whom they receive them, and neither do veterinary surgeons give notice of the existence of the malady when they meet with it, or hear of its being present in certain stables.

We are of opinion that a short Act of Parliament is needed to deal with Glanders and Farcy. Granted that the affection (for they are both one) is seldom, if ever, of spontaneous origin, and that it is not only incurable, but that attempts at cure only tend to keep alive and disseminate the contagion, then we feel assured that, to stamp it out, it is absolutely essential that veterinary surgeons should be prohibited from treating it (except under special conditions), and be compelled to report its existence in any animals coming under their observation ; that all knackers should be licensed, and be also compelled to report every diseased animal they receive, as well as the source from which they received it ; that every person in possession of, or attending on, an animal suspected to be affected with Glanders or Farcy, should either report the same to the authorities or obtain the opinion of a competent veterinary surgeon ; and that veterinary surgeons well acquainted with

the various aspects of the disease should be specially appointed as inspectors.

In view of the recent revelations and of the great prevalence of this dangerous and destructive scourge, it becomes imperative that the present measures, which are ineffective, be supplemented or superseded altogether by others drawn on the lines we have indicated. As this requires special legislation, we trust soon to learn that some Member of Parliament will take up the matter, and give us the benefit of improved sanitary control over Glanders and Farcy in the metropolis and elsewhere.

REPORT ON THE EXPERIMENTS AT THE BROWN INSTITUTION ON PLEURO-PNEUMONIA.

(*Continued from page* 417, *vol. VIII.*)

THE other six animals were inoculated early in the present year ; but in consequence, first of our being unable to meet with cases of Pleuro-pneumonia in situations convenient for our purpose, and subsequently of the obstacles by legislation, all attempts to test the immunity of these animals in an effectual manner proved unavailing ; and I found myself obliged to recommend to the Committee that they should be sold.

The results of the experiments have been so far satisfactory that I cannot help regretting that they have been brought to an abrupt termination. The smallness of the number of the animals which we have had the opportunity of experimenting on renders it impossible to regard them as conclusive. The utmost that can be said is that, so far as they have gone, the results are sufficiently favourable to justify us in recommending further trial of the practice of venous infusion to those who are unlucky enough to have their herds invaded by Pleuro-pneumonia. As regards the safety of the operation itself, I can speak with confidence. Provided that an operator can be found with sufficient dexterity to perform it, and sufficient conscientiousness to avoid the known sources of danger, the trial can be made without risk. Certainty as to its value can only be attained by the experience of some years.

I cannot conclude this report without pointing out that, in case the value of inoculation should be established, there is no reason why the measures of sanitary police which have been enforced by the Legislature should interfere with its useful employment. It has been distinctly recognised as the basis of this legislation that Pleuro-pneumonia is a disease of extremely long incubation—*i.e.*, one which may exist and progress in the organism for months without producing obvious symptoms ; and that it is chiefly communicable by actual cohabitation. The recognition of these two facts has been embodied in the principle of *prolonged segregation of all animals that have been exposed to intercourse with living sources of contagion.* If it is found possible to carry out this principle effectually throughout the United Kingdom, it may be confidently anticipated that the prevalence of Pleuro-pneumonia will gradually diminish until, as may be hoped, it may eventually disappear. The realization of this desirable result would, no doubt, tend to diminish the importance of the question of inoculation. So long, however, as outbreaks of Pleuro-pneumonia still exist, the limitation of its areas of prevalence by restrictive regulations would, in my judgment, materially facilitate the application, within the areas so limited, of whatever other means of prevention might be found to be effectual for the diminution of the number of animals attacked.

APPENDICES.

I. Exposure of animals to emanations from diseased organs.
II. Subcutaneous injection of Pleuro-pneumonia exudation-liquid.
III. Inoculation in the tail by the ordinary method.
IV. Fatal case of "blood poisoning" apparently consequent on infusion of Pleuro-pneumonia liquid into the circulating blood.
V. Inoculations by infusion into the veins.
VI. List of animals experimented upon.

APPENDIX I.

Exposure of Animals to the Emanation from diseased organs.

September 9, 1876.—Portions of lung from a cow affected with Pleuro-pneumonia were conveyed direct from a slaughter-house to the Brown Institution, and while still warm were placed in the mangers of two two-year-old bullocks, known as animals Nos. 3 and 4 in this report. The diseased material was allowed to remain in the mangers during the night, and removed in the morning along with a considerable amount of serous fluid which had drained from it. No washing or disinfection was done after its removal. Both these animals were kept under close observation, and no result of this exposure was observed, and no rise of temperature was recorded,

March 27, 1877.—The above experiment was repeated by placing portions of diseased lung in the mangers of a cow, about six years old, and a two-year-old bullock, known as animals Nos. 2 and 5 in this report. In this experiment the portions of lungs were allowed to remain for twenty-four hours, and when removed the mangers were neither washed nor disinfected. It should be noted that in the case of No. 5 he had barely recovered from an attack of Foot-and-mouth disease, communicated by means of saliva obtained from diseased animals at the Metropolitan Cattle Market. Neither of these animals was affected by this contact with the Pleuro-pneumonia virus, and the daily recorded temperature remained normal.

August 16, 1878.—A favourable opportunity presented itself for repeating this experiment on a larger scale, when portions of fresh diseased lungs were placed in the mangers of seven animals, two cows and five yearlings, known as animals Nos. 10 to 15 in this report ; these animals did not suffer from an exposure of twenty-four hours to these diseased organs.

APPENDIX II.

Injection of Pleuro-Pneumonia Exudation-liquid into the Cellular Tissue.

September 6, 1878.—Five yearling heifers which had been kept under daily observation at the Brown Institution since March, and had been the subjects of experiments on Anthrax, were inoculated by the injection of a few drops of the liquid obtained from a portion of diseased lung (taken from a cow slaughtered the same morning) into the subcutaneous cellular tissue on the side of the neck and front of the shoulder.

The punctures could be felt as mere prominences on the following day, and continued so in all the animals for four days. On the fifth day, in one there was some swelling and tenderness at the seat of puncture, and on the following day a similar appearance was observed in another. The daily record kept will best show the progress and the result of this swelling.

Sept. 11, 1878.—At the seat of puncture in No. 14, there is a little doughy painful swelling.

Sept. 12.—Swelling increasing in No. 14, and just beginning in No. 10.

Sept. 13.—Swelling still increasing in Nos. 10 and 14, temperature normal in all, and no evidence of constitutional disturbance in the two that show local symptoms.

Sept. 14.—Indications of slight swelling in Nos. 11, 12, and 13 ; in Nos.

10 and 14 the swelling is spreading, the temperature of No. 14 is 102·9, in the others still normal.

Sept. 15.—Increase of swelling in all, but most marked in No. 14.

Sept. 15—No. 10.	102·6.	*Sept.* 16.—No. 10.	102·2.
„ 11.	102·4.	„ 11.	102·6.
„ 12.	102·8.	„ 12.	102·8.
„ 13.	102·4.	„ 13.	102·2.
„ 14.	103·4.	„ 14.	104·2.

Sept. 16.—The swelling in the case of No. 14 increasing rapidly, very tender, doughy, and pits on pressure.

Sept. 17.—No. 10. 103·2. Swelling extends along one side of neck.
„ No. 11. 102·9. Swelling about the size of an egg.
„ No. 12. 103·6. Swelling about 6 inches in diameter.
„ No. 13. 102·6. Swelling as large as an egg.
„ No. 14. 105·4. The swelling now extends along both sides of the neck, animal ill, and refuses food.

Sept. 18.—No. 10. 104·2. The swelling is still confined to one side of neck.
„ No. 11. 101·9.
„ No. 12. 103·9. Swelling still spreading.
„ No. 13. 102·0.
„ No. 14. 106·0 At the seat of inoculation the skin is soft and moist, but there is no softening of the swelling generally.

Sept. 19.—No. 10. 104·3. The swelling is now extending along on both sides of the neck.
„ No. 11. 102·2.
„ No. 12. 104·0. The infiltration of the cellular tissue still progressing.
„ No. 13. 101·9. Swelling not increasing.
„ No. 14. 106·4. Constitutional disturbance great, the œdematous swelling now extends from the head along the whole under surface of the neck to the sternum.

Sept. 20.—No. 10. 105·0. The infiltration spreading rapidly.
„ No. 11. 102·0. The progress of the œdema now seems arrested.
„ No. 12. 104·0. The swelling involves nearly the whole of one side of the neck.
„ No. 13. 102·0. Swelling does not increase.
„ No. 14. 106·4. Animal getting weak, losing flesh rapidly ; the swelling spreading down both forelegs, but more particularly the left, the inoculation having been performed on that side. When some incisions were made into the swollen cellular tissue a quantity of serous fluid drained away. On cooling, this liquid became of a gelatinous consistence, and a soft clot separated. Under the microscope few red blood globules and great numbers of large granular cells were seen, but no bacteria or allied organisms could be made out.

Sept. 21.—No. 10. 105·8. The swelling is still advancing, and the animal refuses food, and is losing condition. A few incisions made to relieve the tension if possible.
„ No. 11. 102·0.
„ No. 12. 104·0. Swelling very tender.
„ No. 13. 102·0.
„ No. 14. 105·6. Very weak, lies almost constantly, the incisions discharging freely, but the swelling spreading under chest and along the belly, skin sloughing where it was scarified.

Sept. 22.—No 10. 105·8. The infiltration of the cellular tissue extending down the fore-legs as well as along the whole under surface of neck.

Sept. 22.—No. 11. 102·2. Swelling subsiding.
„ No. 12. 104·5. The swelling still confined to the side of the neck on which the puncture was made. A few small punctures made in the skin with a lancet.
„ No. 13. 102·6.
„ No. 14. 103·0. Can scarcely stand, sloughing condition of the skin, with fœtid discharge.
Sept. 23.—No. 10. 106·4. Very weak, and the incisions in the skin assuming an unhealthy appearance.
„ No. 11. 102·0. Swelling subsiding.
„ No. 12. 103·8. Swelling less tense, but wounds unhealthy.
„ No. 13. 101·8. Swelling subsiding.
„ No. 14. 100·2. Died in the course of the day. *Post mortem* same night. A large quantity of straw-coloured gelatinous exudation in the subcutaneous cellular tissue, extending from the lower jaw along the inferior aspect of the neck, chest, and abdomen, and also extending down both fore-legs below the knee. In some places the exudation was nearly an inch in thickness, and when cut it yielded a pale straw-coloured juice. There was a small quantity of exudation in the peritoneal cavity, but the abdominal viscera were otherwise healthy. On the pleura and pericardium there were some hæmorrhagic spots as well as on the surface of the lungs, which were otherwise healthy.
Sept. 24.—No. 10. 106·4. Wounds sloughing and weakness progressing.
„ No. 11. 101·8.
„ No. 12. 104·0. The swelling now subsiding.
„ No. 13. 102·0.
Sept. 25.—No. 10. 105·8. The swelling extending along the belly, animal sinking.
„ No. 11. 101·8. Very little swelling now remains.
„ No. 12. 103·0. Swelling subsiding, fluid still draining freely from the wounds, which are of a very unhealthy character.
„ No. 13. 101·8. The swelling has almost disappeared.
Sept. 26.—No. 10. 104·0. Lies constantly, can scarcely get up, evidently sinking.
„ No. 11. 101·8.
„ No. 12. 103·2. Swelling much reduced, a fœtid discharge continues from the wounds.
Sept. 27.—No. 10. 102·3. Unable to stand; slaughtered; *post mortem* immediately. With the exception of a few hæmorrhagic spots on the peritoneum, the abdominal viscera were healthy. Pleura studded with hæmorrhagic spots, and contained a small quantity of exudation. Lungs perfectlp healthy.

In this case the swelling extended from the lower jaw along the under surface of the neck and body to the mammary gland, and down both fore-legs as far as the fetlock joints.

Sept. 28.—No. 12. 102·0. Swelling fast disappearing.
Sept. 30.—No. 12. 101·8. Wounds healing, and swelling almost gone.

Appendix III.

Inoculation in the Tail by the ordinary method.

A healthy cow, about six years old, which had been kept under daily observation for several months, and had on three occasions during the month of June, 1876, resisted infection with Foot-and-mouth disease, calved on August 15, 1876, and for a few days both before and after calving an increase in the bodily temperature was noted. As determined by a long series of

observations, the mean normal temperature was 101·6 Fahr., the range of readings being from 101 to 102·2.

Nov. 3, 1876.—About two drops of the fluid which had drained from a diseased lung were injected into the cellular tissue of the tail about 3 inches above its termination. For the first four days the seat of the puncture could be felt as a very small prominence, but on the fifth day it was tender and slightly swollen. The swelling slowly increased up to the 10th day, and was at that date confined to the seat of puncture, and about 1½ inch in diameter.

On the 12th day a slough had formed in the centre of this swelling, which separated on the 17th day, and left an ill-conditioned sore.

A much more extensive secondary swelling now began, involving the whole circumference of the lower part of the tail, and spread gradually upward for 9 inches above the seat of the inoculation by the 33rd day. At this time about 12 inches of the lower part of the tail was twice its natural thickness. This swelling was firm, cold, and painless, except at its upper margin, where it terminated somewhat abruptly in a narrow band, where the skin was hot and tender, and, at which point by the thirty-eighth day, softening began, and the future line of separation was marked out. The dead portion of the tail gradually shrivelled, and finally separated without hæmorrhage on January 3, 1877, the 58th day after inoculation. Under ordinary circumstances the dead portion of the tail would have been amputated long before, but in this case the sequel to the inoculation was watched without interference.

While these changes were taking place at the seat of inoculation the animal showed no signs of constitutional disturbance ; the mean temperature during the 58 days was 101·64, and the daily readings ranged from 101·2 to 102·2. No suppuration attended this sloughing, and the small raw surface on the end of the stump healed in a few days.

This animal was afterwards placed in a cow-shed where Pleuro-pneumonia existed on November 23, 1877, and kept there until January 9, 1878, when, being so ill that there was little prospect of recovery, she was slaughtered. A post-mortem examination showed that the illness of this animal was due to the presence of a large surgical needle which had been swallowed with the food, and having transfixed the wall of the second stomach had injured the liver and diaphragm, causing a large diaphragmatic abscess ; in addition, the liver was extensively diseased and contained a large number of parasites. The lungs and pleura were perfectly healthy. No trace of any adhesions or sub-pleural exudation.

Appendix IV.

Fatal case of "Blood-poisoning," apparently consequent upon the injection into the circulating blood of Pleuro-pneumonia Virus.

A cow supposed to be about thirteen years old had been kept under daily observation at the Brown Institution for eight months. In June, 1876, she resisted infection with Foot-and-mouth disease on four occasions. With the exception of a cough (which was mostly heard in the morning or when disturbed after she had been lying for some time), she appeared in good health. The mean normal temperature obtained by daily observations extending over several months was 100·8° Fahr., the range of the readings being from 100·1 to 101·7.

About the middle of November for several days the temperature rose without any apparent cause, and again declined to the normal ; no other change in the animal's condition was noted. During the first 12 days of November the highest recorded temperature, that on the 12th, was 102·2, and the lowest, on the 10th, 101·2.

The daily record was as follows :—

Nov. 12.—102·2	*Nov.* 15.—103·8
„ 13.—103·4	„ 16.—102·4
„ 14.—104·0	„ 17.—102·0

The temperature continued normal during the remainder of this month and the early part of December.

Dec. 12, 1876.—Three fluid drachms of the exudation-liquid from Pleuro-pneumonia lung were injected into the posterior auricular vein.

Little local effect was produced for the first 15 days ; the animal showed no constitutional disturbance, the temperature being 101·73° Fahr., and th highest 102° Fahr.

Dec. 28.—The 16th day the temperature rose to 103·2, but no other symptom was observed ; the pulse and respiration remained normal, and the cow fed and ruminated as usual.

Dec. 29.—Still feeding and ruminating, but appears ill, breathing difficult and irregular, 30 per minute, pulse 60, temperature 105·6. Stands with head elevated and nose protruded, evinces no signs of pain when the intercostal spaces are pressed.

Dec. 30.—Dull and prostrate, not feeding, constipation with mucus coating of fæces ; respirations 32, pulse 70, temperature 105·4. When moved she grunts, and shows some indication of pain when the intercostal spaces are pressed. Auscultation does not reveal any lung consolidation.

Dec. 31.—In the same prostrate condition as yesterday, neither feeding nor ruminating, respirations 30, pulse 68, temperature 105·2.

January 1, 1877.—Prostration increasing, losing condition rapidly, respiration 32, pulse 64, temperature 105·6.

Jan. 2.—Respirations 36, pulse 70, weak, and temperature 105·6.

Jan. 3, 9 A.M.—Respiration 60, and accompanied by a grunt, which proved, on examination, to be due to the closure of the glottis after each inspiration, the pulse was indistinct in the superficial vessels ; temperature 104·8. At 3 P.M. on the same day the temperature had fallen to 104, and by 9 P.M. to 102·8—2° in the twelve hours.

Jan. 4.—Lying and unable to get up, breathing heavily, grunting, shivering, and grating her teeth ; respirations 82, pulse imperceptible, temperature 101·6 in the morning, and only 100·4 at 10 P.M., when the animal was evidently sinking.

Jan. 5.—Died about 7 A.M. Post-mortem 8 hours after death. With the exception of a small blood-clot under the capsule of the liver, the whole of the abdominal viscera were healthy ; this small clot was recent, and probably due to a slight rupture in some of the animal's struggles to get up.

The costal pleura on both sides showed numerous patches of recent exudation, the vicinity of which was studded with small hæmorrhagic spots, the surfaces of both lungs were smooth, and free from any adhesions to the sides of the chest, and from sub-pleural exudation, although on the surface of both there were some hæmorrhagic patches. The right lung, from the animal having died on that side, was dark-coloured and full of blood, but its tissue was healthy and crepitant throughout. Along the thin margin of the middle part of the left lung there existed a patch of partially consolidated tissue, about three or four inches in extent. The firm straw-coloured exudation, which was confined to the interlobular tissue, not invading the lobules themselves, varied in thickness from $\frac{1}{16}$ to $\frac{1}{8}$ inch. When cut, no juice exuded from the surface, such as is always seen in cases of acute contagious Pleuro-pneumonia.

The whole appearances showed conclusively that this exudation was not the result of any recent inflammatory action, but some old morbid process in the interlobular tissue.

In addition, about the middle of the superior aspect of the left lung,

there existed a cavity bounded by a strong resisting membrane containing a mass of dead lung, the remains of the interlobular tissue being easily made out under the microscope. This piece of necrosed lung was as large as an egg, and was infiltrated and partially surrounded by cheesy material.

Such cavities, containing portions of dead-lung tissue, have frequently been met with in the lungs of cattle which have recovered from limited or partial attacks of Pleuro-pneumonia.

Professor Brown, in the Annual Report of the Veterinary Department of the Privy Council for 1876, at pp. 18, 19, describes a case of this kind where the animal was slaughtered eleven months after recovery.

The French Commission, in reporting the results of their experiments in 1854, stated that in six out of eleven uninoculated animals that had been exposed to the influence of contagion by three months' cohabitation with diseased animals without apparent result, they found portions of dead lung encysted. This would go far to show that these six animals had been the subjects of limited attacks of the disease.

Appendix V.

Inoculation by the infusion of Pleuro-pneumonia Virus into the Blood.

In performing inoculation by this method, the vein running down the back of the ear was selected on account of its moderate size and superficial position.

The vein was exposed by a small incision in the skin, and the sharp-pointed steel cannula of a subcutaneous syringe introduced into the vein, and the fluid obtained from the diseased lung slowly passed into the blood-stream by the syringe. The vein was afterwards secured by a ligature, and the small wound in the skin closed by a suture. In the first attempts at inoculation by this method, it was found that the ligature of the vein and the suture in the skin caused some swelling, which did not subside in less than fourteen days. It was also seen that by making an incision in the skin, the risk of introducing the virus into the cellular tissue, which has since been proved to be extremely dangerous, was very much increased. It was afterwards found that, with the exception of one case in which the vein was very small, in a calf about two months old, the incision in the skin could be dispensed with. By shaving the hair off the spot selected for the operation, and applying pressure so as to cause the distention of the vein by blood, it could be distinctly seen, and a fine-pointed steel cannula passed into it in the direction of the blood-stream. That the cannula was in the vein itself, and not merely lodged in the sheath or surrounding cellular tissue, was readily demonstrated by allowing a few drops of blood to flow before attempting to inject the virus. By this means the risk of inoculating the cellular tissue was reduced to a minimum if not entirely avoided. The application of slight pressure over the vein for a few seconds after the withdrawal of the cannula was found sufficient to stop any slight bleeding from the puncture, and thus the trouble and danger of applying a ligature to the vein was found unnecessary.

Sept. 9, 1876.—The animals, known in this Report as Nos. 5, 6, 7, and 8 (see Appendix VI.), had been under daily observation at the Brown Institution for three months, and during the whole of that time had remained perfectly healthy, as is shown by the following temperatures :—

	Highest.		Lowest.		Mean.
No. 5.—	102·6	...	101·45	...	101·65
„ 6.—	102·6	...	100·4	...	101·55
„ 7.—	102·8	...	101·1	...	101·95
„ 8.—	102·6	...	101·2	...	101·9

The inoculation was performed by injecting two fluid drachms of fresh Pleuro-pneumonia exudation into the vein. The only local effect observed was a little swelling of the wound, which disappeared, leaving only the cicatrix of the incision by the fourteenth day.

No constitutional disturbance followed this injection of the virus into the blood ; the daily temperature of all the animals continued normal, as is shown by the following Table, the results of forty daily observations of each animal :—

	Highest.		Lowest.		Mean.
No. 5.—	102·6	...	101·4	...	101·65
„ 6.—	102·2	...	101·3	...	101·71
„ 7.—	102·9	...	100·7	...	101·8
„ 8.—	102·4	...	101·0	...	101·7

Nov. 3, 1876.—Some of the fluid collected for the inoculation of No. 2 in the cellular tissue of the tail was used for infusion into the vein in animals Nos. 3, 4 and 9 (See Appendix VI.). The animals Nos. 3 and 4 had been exposed to contact with portions of diseased lung on September 9, but the daily temperature recorded, commencing in June, shows that they had been healthy during the whole time :—

	Highest.		Lowest.		Mean.
No. 3.—	101·9	...	101·1	...	101·29
„ 4.—	102·0	...	100·0	...	101·15

In the case of No. 9, the animal was barely three months old, and the normal temperature, as the mean of twenty daily observations, was found to be 102·2.

The local effect produced by the injection into the vein was only slight in Nos. 3 and 4, and the wounds had closed and all swelling disappeared in from twelve to sixteen days. In the case of No. 9 the vein was so small that even when fully exposed some difficulty was found in introducing the cannula. Although no infiltration of the surrounding cellular tissue resulted from the injury inflicted, an abscess about the size of a pigeon's egg formed, and the wound was not closed until the twenty-third day after the inoculation, but no secondary swelling appeared, and no general disturbance was observed in any of these animals, even although the quantity of fluid injected was three fluid drachms. As proof of this, the result of the daily temperature observations during the forty days immediately succeeding the operation may be quoted :—

	Highest.		Lowest.		Average.
No. 3.—	102·4	...	101·2	...	101·7
„ 4.—	102·0	...	101·2	...	101·6
„ 9.—	102·8	...	101·9	...	102·21

Dec. 12, 1876.—A portion of the material used for the inoculation of the cow No. 1, referred to in Appendix IV., was used for the second inoculation of Nos. 3, 4, 5 and 6. The operation was this time performed without making an incision in the skin. The local effect produced by the puncture was only a very slight prominence, which could be felt for a few days.

The quantity of fluid injected was again three drachms.

No constitutional effects were visible as the result of this inoculation, although the animals were under observation for some months, as will be seen by reference to Appendix VI.

They were afterwards submitted to contact with diseased animals, and were kept in infected places, to test, as far as practicable, the protective value of the inoculation. The animals Nos. 3 and 4 were slaughtered March 1st, 1878, after a test exposure in an infected shed in November and December,

1877. A post-mortem examination was made, and the lungs of both were found in every respect healthy. Animal No. 5 was infected with Foot-and-mouth disease in March, 1877, and was placed in a shed infected with Pleuro-pneumonia in November, 1877, and continued healthy up to the end of March, 1878, when he was disposed of. No. 6 was placed among infected stock, July, 1877 ; was brought back to the Brown Institution in February, 1878, when he was made the subject of a test experiment relating to the communication of Anthrax by feeding.

March 27, 1877.—Animals Nos. 7, 8 and 9 were a second time inoculated by injecting into the veins three drachms of Pleuro-pneumonia virus.

Since their previous inoculation on September 9, 1876, Nos. 7 and 8 had been castrated in November, the result of which operation was to cause an increase of temperature for a few days. They had also been affected with Foot-and-mouth disease in February, 1877, induced by eating hay moistened with the saliva of diseased animals.

As the result of this Pleuro-pneumonia inoculation, no general effect was produced ; they were all kept at the Brown Institution till July, and then placed along with No. 6 among diseased stock, and brought back to the Brown Institution, for experiments on the production of Anthrax in February, 1878. Nos. 7 and 8 were afterwards sold at the end of March, but No. 9, for which another animal was obtained in exchange, remained at the Brown Institution in a healthy condition till the middle of May.

September 2, 1878.—The five yearlings referred to in Appendix II. were inoculated by the injection of two drachms of Pleuro-pneumonia virus into the vein. At the seat of puncture a mere prominence could be felt, which had quite subsided by the 6th, when the subcutaneous injection was performed. These animals had been the subjects of Anthrax experiments in May and June, but their temperatures had remained normal from the middle of July, and continued so until after the subcutaneous inoculation on September 6. As no opportunity was found for placing these animals in infected sheds, they were finally sold in a healthy condition in November.

September 6, 1878.—Two cows, which had been under almost daily observation at the Brown Institution during May, June, and July, while the subject of vaccination observations, not connected with the work of the Royal Agricultural Society, were purchased for Pleuro-pneumonia experiments. Some of the Pleuro-pneumonia virus used for the subcutaneous inoculation of the five yearlings, Nos. 10 to 14, was injected into the vein of these two cows. No result was observed further than a mere prominence at the seat of puncture, which could be felt for a few days.

As these could not be placed in infected places, they were disposed of as healthy in the beginning of November.

THE VITAL RESISTANCE OF THE PORK-MEASLE (*CYSTICERCUS CELLULOSUS*) AND SOME OTHER ENTOZOA.

In the *Zeitschrift für Praktische Veterinær, Wissenschaft.* Professor Perroncito gives an interesting account of some experiments he had made in order to ascertain the vital resistance of the Pig-Measle and some other entozoa of that class ; experiments which are important from a sanitary point of view. As the result of his investigations, we may give the following *résumé :—*

1. A careful study ofthe m ovements of the *Cysticercus* and other helminths, the ascertaining of their more or less rapid imbibition of various staining fluids, and the experiments made with a view to discover the conditions under which the development of these parasites takes place, afford certain indications which enable one to distinguish living from dead *Cysticerci.*

2. The warm table of Schulze gives the best means for determining the temperature at which these minute entozoa—no matter what form they present—succumb. By this apparatus the temperature can be gradually raised until death occurs.

3. The movements of the Cysticerci and other larval forms of entozoa are of the highest importance, when it is a question of deciding as to whether they are alive or dead.

4. Dead *Tæniæ* and *Cysticerci* are rapidly and strongly impregnated by neutral tints, the dead tissues of many species of entozoa being also more readily impregnated than living tissue.

5. The attempts at growing or cultivating entozoa only confirm the importance of recognising the existence or non-existence of movements when it is required to distinguish whether an entozoon is dead or alive.

The practical conclusions Perroncito arrives at from his inquiries are the following :—

1. The *Cysticercus cellulosus* (Pig-Measle) rarely succumbs to a temperature of 45° cent., more frequently 47°, ordinarily 48°, sometimes 49° only, and exceptionally it resists as much as 50°. It assuredly perishes if exposed to the latter temperature for a minute.

2. The *Cysticercus pisiformis* of the rabbit, like the Cysticercus cellulosus, loses its contractility and dies sometimes at 45° or 46°, but usually it resists to 47° or 48°.

3. A *Cysticercus tenuicollis* succumbed at 49°.

4. The scolices of the *Cœnurus cerebralis* of the sheep die at 42°.

5. The scolices of the echinococcic bladders usually succumb at 47° or 48°, and never in any case resist a temperature of 50°.

6. The *Tænia cucumerina* died in one instance at 43°, and in another at 45°.

7. The *Tænia serrata* of the dog succumbed at 50°.

8. Of two *Tæniæ perfoliata* (horse) one died at 45° the other at 50°.

9. The movements of the embryos of *Filaria microstoma* ceased at 45°, and the entozoa were dead at 48°.

10. Perfect individuals as well as the embryos of *Filaria megastoma* (from the horse's stomach) perished at 47°.

11. The embryos of *Strongylus filaria* usually became motionless at 47° or 48° ; they rarely resisted 49°, and in one instance only was 50° reached. Death was instantaneous at the latter temperature.

12. The *Oxyuris vivaporous*, the infusoria of the colon and cæcum of the horse, and psorosperms of the rabbit's liver, never exhibited movements under the influence of the different modifications of temperature to which they were submitted.

A LARGE BLOOD-CLOT GIVING RISE TO SYMPTOMS OF CARDIAC EMBOLISM.

THOUGH this case appeared in the *Revue Vétérinaire* some time ago, yet we offer no apology for bringing it under the notice of our readers now, because of its interest and importance. The case is related by M. Larrony, veterinary surgeon to the stallion depôt at Pau, and the subject of it was a half-bred English horse, seven years old, which had never before suffered from disease. Being reported unwell it was examined by Larrony, who found indications of ordinary Pneumonia, the affection being limited to the lower portion of the right lung. By resorting to blood-letting, sinapisms, and the administration of tartar emetic, etc., the more acute symptoms appeared to be subdued. Two days afterwards, however, the patient was worse, and

towards ten o'clock at night, he fell suddenly as if shot. At intervals there was hæmorrhage from the nostrils and mouth. The same medical treatment was persevered in, and the bloodletting was repeated, a larger quantity being abstracted than before.

Next day the horse appeared lively, had a good appetite, the respiration was less hurried than on the previous evening, and the respiratory murmur was less confused in the diseased lung. While Larrony was present the animal again suddenly fell, and the symptoms observed were "truly extraordinary," and such as Larrony had never witnessed before.

There was a kind of violent tetanic attack, during which the respiration was suspended. The limbs became rigid, the head thrown back on the neck, and the tail raised over the croup ; the abdominal muscles were in a state of extreme contraction, and the *Membrana nictitans* covered the entire globe of the eye. This state lasted for about forty seconds. Then a change ensued. The tetanic contractions diminished ; soon the limbs became flexed, and were moved convulsively ; the respiration resumed its normal character, then became hurried, tumultuous and dyspnœic ; the *facies* denoted extreme anxiety ; the horse threw himself on his sternum and coughed—the cough being deep, difficult, and stridulous, then moist, and succeeded immediately by another fit of hæmorrhage from the mouth and nostrils, the blood being spumous and arterial-tinted. Finally, and very quickly, the body was covered with an abundant perspiration ; the horse arose, but its strength seemed to be gone—the dyspnœa subsided until there was only a persistent acceleration of the flank movements, coinciding with an aggravation of the Pneumonia.

Larrony, attributing these attacks, each with its tetanic and hæmorrhagic phases, to some sudden obstruction in the pulmonary or cardiac circulation, was of opinion that they were due to embolism, and prognosticated a fatal termination in a short time.

During the six succeeding days, the horse had four more attacks at irregular intervals, but each exactly like the previous ones. The Pneumonia and debility advanced progressively ; the pulse became irregular and intermittent after every third pulsation ; emaciation set in rapidly ; a seventh attack of the alarming condition before mentioned was succeeded by Hemiplegia of the left side of the body ; and, finally, during the night of April 6-7—fifteen days after the first symptoms became manifest—the horse fell, never to rise again.

At the autopsy, made twelve hours after death, the characteristic alterations of pulmonary lobular hepatisation were found. But it was in the heart and large vessels that those lesions were discovered, which could alone furnish an explanation of the very unusual symptoms manifested by the horse in the course of the disease. There were the signs of Endocarditis in the two ventricles ; in the left side of the heart was a fibrinous clot, situated beneath the mitral valve and pushing it upward, itself being prolonged into the aorta to an extent of about eight inches, and also into the left coronary artery. This enormous clot almost completely obstructed the auriculo-ventriculo opening ; at the inferior extremity it was thick, a little flattened, but bi-convex on its two surfaces. The mitral and sigmoid valves had alone left their imprint on the clot. The superior or arterial prolongation of this clot was less obstructive, and had gradually diminished in size as it followed the blood current. A single division occupied the left coronary artery ; five or six more or less tapering prolongations of variable length, but all pretty nearly the size of a goose quill, entered the aorta. Throughout its dimensions, the clot was yellow and resisting ; but its density and resistance diminished as it became prolonged.

The presence of the clot in the left side of the heart, according to Larrony, explained the cerebral anæmia, as well as the occurrence of

Hemiplegia, which was observed before the horse died. The blood, in fact, was supplied to the brain in insufficient quantity, and this diminished supply also explained the weakened vital functions which formed so conspicuous a feature in the case.

In the right side of the heart were clots of recent formation, and extending into the pulmonary arteries. At the bifurcation of these vessels to a small extent the internal tunic was roughened, nodulated, and grated under the bistoury.

There was a small quantity of sero-sanguineous effusion at the base of the brain.

EPIZOÖTY AMONG CATS, CAUSED BY WORMS.

In the *Giornale di Medicina Veterinaria Practica* for August, 1877, Dr. Romano, of Gemona (Friuli), relates the outbreak of an epizoöty among cats, due to *Tænia crassicollis*. It appears he was informed by his friend Dr. Leoncini, practising at Osoppo, that during fifteen days the majority of the cats in a hamlet of that commune had perished from some inappreciable cause, after presenting the following symptoms : gradual diminution, then complete loss of appetite, abdomen retracted, slight diarrhœa followed by constipation, profuse salivation, contraction of the elevator muscles of the upper lip in some instances ; great prostration of strength, and loss of sight. Some of the sick creatures lost their hearing, or at any rate did not respond to the call of those whom they used to recognise. Some among them vomited, and appeared to be relieved by the act, as their appetite returned ; but soon they succumbed like the others. Nervous phenomena, epileptiform convulsions, and more frequently symptoms of Colic were likewise remarked.

When Dr. Romano arrived in the locality, he could not procure any bodies of diseased cats, as the children had thrown them into the river Tagliamento which runs below the fortress of Osoppo, and he had to wait for some days before he had an opportunity of making a *post-mortem* examination of the carcase of a cat which had just died. In this he found the principal lesions located in the stomach. The walls of that viscus were contracted, and the mucous membrane was the seat of a catarrhal inflammation, in the products of which was found a long, white, flat worm, which was carefully kept for study. The stomach, as well as the intestines, contained no traces of food ; the latter were equally destitute of fæcal matters, and offered all the appearances of chronic inflammation. The other organs were healthy.

An examination of the worm was made with the assistance of Drs. Leoncini and Fachini. The helminth had the body divided into segments, and measured twelve centimetres in length, and five or six millimetres in breadth ; it had all the characters of a tapeworm, and a microscopical examination of its head confirmed this.

Some days afterwards Romano made an autopsy on two other cats. In one of them he found the alterations described above, and discovered a smaller tapeworm than the other. The second cat also offered the same lesions, but no worm could be discovered ; and this circumstance baffled Romano, until several people of the locality assured him that they had seen their cats, in the course of the disease, and after violent and repeated efforts, vomit a kind of white cord like the tapeworm the doctor showed them. Re-assured and confirmed in his diagnosis by this information, he then proceeded to ascertain the name of the worm, and found that it was the *Tænia crassicollis*, which proceeds from the *Cysticercus fasciolaris* found in the liver of rats. He was informed that, during the summer, the houses in Osoppo had been ravaged by swarms of rats from the fortress. These had been greatly suppressed by cats, and it was the best rat-killers which died. There was here a relation between cause and effect which could not be denied.

Proceedings of Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Report of Proceedings at the Quarterly and Special Meetings, held on the 1st of July, 1879.

Present :—The President (Professor Williams), General Sir F. Fitzwygram, Bart., Professor McCall, Professor Pritchard, Mr. Anderton, Mr. Batt, Mr. Blakeway, Mr. Cartwright, Mr. Collins, Mr. Cuthbert, Mr. Freeman, Mr. Gowing, Mr. Greaves, Mr. Harpley, Mr. Morgan, Mr. Reynolds, Mr. Robertson, Mr. Taylor, Mr. Whittle, Mr. G. Williams, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Correspondence.

Letters were received from Professor Simonds, Professor McCall, Professor Walley, Messrs. H. J. Cartwright, George Williams, and Mr. James Moon, acknowledging their re-election as Vice-Presidents.

A letter was received from Mr. Menzies, of the Highland and Agricultural Society, acknowledging the receipt of six copies of the Supplemental Charter; from Mr. E. B. Nicholson, of the London Institution, Finsbury Circus, in which he desired to present to the Library of the College a copy of his work on "The Rights of an Animal."

On the motion of Mr. Cartwright, seconded by Mr. P. Taylor, a vote of thanks was awarded to Mr. Nicholson for his presentation.

A letter was also received from Mr. Dray, declining the honour of his re-election as Vice-President and Treasurer, which step he had, he said, taken after mature deliberation.

The Secretary remarked that Mr. Dray had been for a great number of years a very useful member of the Council, and it would now be necessary in consequence of his resolution, to elect both a Vice-President and Treasurer.

Reports of Examiners.

At the meetings of the Scotch Section of the Court of Examiners, held in Edinburgh and Glasgow on April 16th and 17th, three students from the Edinburgh Veterinary College passed ; and sixteen students from the New Veterinary College passed and obtained their diplomas.

Also at another meeting, held in Glasgow on April 17th, seven passed and two were rejected.

At the meetings of the Scotch Section of the Court of Examiners, held in Edinburgh on the 14th April, for "the first examination," from Edinburgh Veterinary College seven passed and two were rejected, and from the New Veterinary College, Edinburgh, ten passed and one was rejected. From the Glasgow Veterinary College two students passed.

At the meetings of the Scotch Section of the Court of Examiners, held on April 18th, for "the second examination," from the Edinburgh Veterinary College six passed and seven were rejected ; and at a meeting on the same day, the same examiners being present, from the New Veterinary College three passed and two were rejected ; also for "the second examination," sixteen passed and two were rejected.

At the meetings of the Court of Examiners, held at Glasgow on April 21st and 22nd, for "the second examination," from the Glasgow Veterinary College seventeen passed and ten were rejected.

Mr. Harpley, alluding to Mr. Dray's letter of resignation, expressed himself as extremely sorry that such an old and faithful servant of the

institution had sent in his resignation, and he thought it was the duty of all the members of the Council to try and induce Mr. Dray to reconsider his decision. He would move a resolution to that effect.

Mr. GOWING thought that there must have been some private reason or some offence taken on the part of Mr. Dray before he had come to such a conclusion, and he was of opinion that, until the real cause of the resignation was known, Mr. Dray should not be further solicited in the matter. He felt disposed to elect another Treasurer, and would propose in the room of Mr. Dray, General Sir F. Fitzwygram.

General Sir FREDERICK FITZWYGRAM said he had great pleasure in seconding Mr. Harpley's motion. He thought it would not only be a courteous act, but almost a duty on the part of the Council to ask Mr. Dray to consider his refusal. Mr. Dray was not only an old member of the profession, but he was one who had stood very high in the profession as an honourable man (applause), and had fulfilled his duties well and faithfully. In addition to these considerations, Mr. Dray resided in London, which was a most important consideration. Mr. Dray was one of the most useful members of the Council, and he had great pleasure in seconding the motion that that gentleman would re-consider his decision.

Mr. GOWING said he still adhered to his views in the matter.

Mr. MORGAN thought that Mr. Dray ought not to be pressed to re-consider his decision, and proposed as an amendment, that Mr. Dray's resignation be accepted.

Mr. GOWING seconded the motion.

Mr. GREAVES thought it would have been more satisfactory to the Council if Mr. Dray had given his reasons for resigning. He also thought that if the system were commenced of requesting gentlemen to withdraw their resignations, it might be continued *ad infinitum*. It had only been in rare instances that the Council had resorted to such a course. He presumed that Mr. Dray had resigned after due deliberation, and he (Mr. Greaves) was not one of those who would go hat in hand and ask Mr. Dray to re-consider his decision. He felt disposed to vote against Mr. Harpley's motion.

In the result, six members voted for the amendment and ten for the motion, the motion was therefore declared carried.

The SECRETARY read a letter addressed to Dr. Dunsmure by a student who had not presented himself for examination, and also another letter, of similar import, addressed to himself, in which the applicant asked for a return of the fee he had paid.

After some conversation, it was resolved that the Secretary be instructed to write to the effect that the applicant could again come up for examination, but that the fee could not be returned.

The SECRETARY read the following letter from Professor McCall, relative to Mr. Crozier's case :—

"W. H. Coates, Secretary, R.C.V.S., London.

"Veterinary College, Buccleuch Street, Glasgow, April 30, 1879.

"DEAR SIR,—Mr. James Crozier, a student of this college, enrolled under the 'old rules,' and rejected the second time at the 'final examination,' held here on the 17th inst., is anxious to attend another winter session, and come up again for examination in April, 1880. Apparently, the examinations for the diploma, under the old system, cease in July of this year ; but in view of Mr. Crozier's intentions being carried out, will the Council of the R.C.V.S. grant him the privilege of presenting himself again and for the third time before the examiners in April, 1880? I am, etc.,

"JAMES MCCALL."

The SECRETARY said he believed it was agreed that the examinations

should extend to Christmas ; and therefore it would be in January, 1880, when the examinations would cease, but not in April.

Professor McCALL said there might not be a body of examiners competent to deal with Mr. Crozier in January, and it would therefore be a great advantage to him if he were allowed to come up in April.

Gen. Sir FREDK. FITZWYGRAM said it was well known to the Council that the trouble and expense of a duplicate system of examination was very great. With the assent of the three schools the time of the examination was limited to January, 1880, and that was considered sufficient to cover every grievance. If the present application were acceded to there might be no end of similar applications ; and he thought it advisable to stick to the rules.

The matter was then allowed to drop.

Appointment of Committees.

The following are the members appointed for the several committees for the ensuing year :—

Finance Committee : Messrs. Cartwright, Greaves, Harpley, Moon, Morgan, and Taylor.

Publication Committee : Professor Brown, and Messrs. Batt and Fleming.

House Committee : Messrs. Batt, Harpley, Professor Pritchard, and G. Williams.

College Fund Committee : Professor Brown, and Messrs. Gowing, Harpley, and Whittle.

Parliamentary Committee : Professors Simonds, Brown, and Pritchard, and Mr. Cuthbert, Gen. Sir Fredk. Fitzwygram, Mr. Greaves, Mr. Reynolds, and Mr. Taylor, with power to add to their number.

Library Committee : Professor Axe, and Messrs. Blakeway and Harpley.

Examiners for the Fellowship Degree.

Mr. GOWING proposed that the Board be re-appointed, but Mr. Harpley and Professor Williams declined, upon the grounds that they thought the honour ought to be participated in by other members of the College.

The gentlemen appointed for the office were Professor Duguid, and Messrs. Collins, Fleming, and the Dean or a member of the College of Preceptors.

The Fitzwygram Prizes.

The SECRETARY read the report of the Fitzwygram Prize Examination.

Gen. Sir F. FITZWYGRAM said there was no doubt that the number of competitors for these prizes had been somewhat unsatisfactory, and he wished to give notice that next year the competition for them would be limited to gentlemen who passed with great credit, but would be extended to members of the Royal College of Veterinary Surgeons who have held their diploma not more than two years instead of one year as heretofore. The number of marks necessary to pass on from the first to the second stage of the competition would be raised from fifty to seventy-five per cent. on the numbers allotted to each subject.

The SECRETARY intimated that two letters had been received from Professor McEachran, of the Veterinary College of Montreal, addressed to the Secretary of the Royal College of Veterinary Surgeons, in which he wished to lay before the Council a petition for affiliating the College at Montreal with the Royal College of Veterinary Surgeons.

The SECRETARY was instructed to write to the effect that the Council had no power to affiliate under the Charter, and that the matter rested entirely with Her Majesty's Government.

The obituary notice was read.

On the motion of Mr. Gowing, the Secretary was instructed to send a letter

of condolence to the family of the late Professor Varnell, whom Mr. Gowing described as a much-respected and worthy member of the profession.

Finance Committee.

The report stated that the vouchers and receipts for payments during the preceding quarter had been examined and found correct. The present liabilities amounted to £307 13s. 5d., which the Committee recommended should be discharged. This would leave a balance at the bankers of £389 16s. 1d.

On the motion of Mr. Batt, seconded by Mr. Whittle, the report was received and adopted.

Cheques were ordered to be drawn for the current expenses.

Certain improvements in regard to picture-frames, carpets, and mats, suggested by the House Committee, were relegated to that body for consideration.

A letter was read from Mr. Dyke Broad, of Bath, enclosing the sum of £2 16s. od., as a balance from the late West of England Veterinary Medical Society to be added to the College Fund, and the sum of £2 4s. od. as a subscription from himself.

A letter was read from Mr. Thomas Moore, of 11, Upper Berkeley Street, Hon. Sec., *pro. tem.*, of a local society of Veterinary Surgeons, asking for the use of the Board-room of the College for their meetings.

After some discussion, the Secretary was instructed to write to the effect that the Council were unwilling to grant the use of the Board-room for the purpose referred to.

The SECRETARY submitted a specimen of the diploma to be granted to the members of the Highland and Agricultural Society.

Mr. COLLINS gave notice of motion of alteration in bye-law No. 4. The Army Veterinary Department numbered something like 150 or 160 members, and the majority of these were not at present in the position of recording their votes. There were at the present time over eighty members in India, and nearly twenty in South Africa ; and these gentlemen were, to all intents and purposes, shut out from voting. His object in proposing an alteration in the bye-law was, to enable them to record their votes. He proposed to add to the words "every member," the words "in the United Kingdom," and also "that in the case of members resident abroad it will suffice if they forward to the Secretary, in a prescribed form, so as to reach him seven clear days prior to the election, the names of not more than six gentlemen for whom they wish to vote."

The Secretary was about to read two letters from Professor Walley when, on the motion of Sir F. Fitzwygram, seconded by Mr. Taylor, it was resolved, that the letters be not read, on the ground that such a course was unusual, especially in a case where members of the Council could very well be present.

It was announced that Mr. Fleming, who was absent on duty, desired that the consideration of the motion standing in his name should be suspended until the next annual meeting.

This concluded the business of the quarterly meeting, after which

A Special Meeting

was held, for the consideration of certain alterations in the bye-laws. Mr. P. TAYLOR proposed, pursuant to notice of motion, that bye-law No. 37 be expunged. As it stood, it provided that "No Student shall be allowed to present himself before either section of the Board of the Royal College of Veterinary Surgeons for his first, second, or third examination more than three times." He considered this bye-law to be grievous, cruel, and unjust.

In support of his views he adverted to the arguments he had advanced on a previous occasion when the question was mooted, and also combated the views then advanced by Mr. Collins, Sir F. Fitzwygram, and others. As a special proof of the injustice of the bye-law, he instanced the case of Mr. Wallis, which had been brought forward at the last annual meeting.

Mr. GOWING, while seconding the proposition, said he differed somewhat from the views of Mr. Taylor, and thought there should be some stimulus to the students in the shape of doubling the fees, after having been rejected on the third examination.

Mr. GREAVES supported Mr. Taylor's motion, remarking that the students ought to have as many chances as were necessary.

Mr. COLLINS thought that none of the bye-laws ought to be tampered with without sufficient grounds. It had been said that the matter of rejection ought to be left to the schools; but with all due respect for the schools, he thought this view might be challenged. By the retention of the bye-law the hands of the principals of the colleges would be very materially strengthened, because they would be able to turn round to the bye-law and get rid of any difficulty, knowing that if the student remained at the college he would not do himself, the college, or the profession any credit. The second argument that had been advanced by Mr. Taylor was that there was no such bye-law in the clerical, legal, or medical professions; but he would point out that the position of those professions was assured, and when the position of the Royal College of Veterinary Surgeons had reached a similar standpoint, then it would be time enough to abolish the bye-law. The profession could not afford to have any inefficient members in its midst. The next argument that had been used—and the one which, in his opinion, was the weakest of the lot—was that students, if they were rejected three times, would still continue to practice as quacks, and the country would be over-run with them. But he would ask whether it was not better that inefficient men should be known in the country to be quacks than that they should be palmed off on the public as efficient Veterinary Surgeons. The fraud would rest with the Royal College. The next argument was the sentimental grievance. It had been stated that the student would be ruined and would have no prospect of gaining a position in life and society, and all that sort of thing. These sentiments, no doubt, did great credit to his friend Mr. Taylor, who had a large heart and a warm nature; but he contended that the profession could not yet afford to indulge in sentimental legislation. The object of the Council was to raise the standard of the profession, and students knew what they might expect when they entered into the contest. If the idea were carried on to its logical conclusion, and the feelings of the students and their parents were exclusively and entirely studied, the result would be that the tone of the examinations would be lowered. If the bye-law were cancelled, he believed that a large percentage of idle, lazy, and perhaps dissipated students would be constantly hanging about the colleges, and that the principal incentives for them to work would be taken away. He had been told by some of the professors that students did not work so well now as they did in former times. For years past the object desired by the profession, and advocated by the veterinary periodicals, had been to raise the standard of education. The very name of education had become so hackneyed that one was tired of hearing it; the reason being that the profession was tired of words and wanted actions. With regard to what occurred at the annual meeting in regard to Mr. Wallis's case, it ought to teach them a severe lesson. He never saw a more humiliating spectacle than that of a member of the profession taking advantage of his position, and airing his grievances in public. There might be a great complaint that a verdict was snatched on that occasion, but the gentlemen assembled at the annual

meeting formed a very small fraction of the profession, and he submitted that if the question had been put before the profession generally in its proper bearings and different lights, the verdict would have been very different. What was the immediate result of that? No sooner had Mr. Wallis sat down than one of the oldest members of the profession got up and impugned the very honesty, integrity, and capacity of the examiners. What he meant was, that if students were rejected more than three times, it arose, not from the stupidity of the students, but from the stupidity of the examiners; and he ventured to say that the speaker would not have ventured to make such a statement as that if it had not been for what previously occurred at the annual meeting. He was of opinion that the abolition of the bye-law would prevent the realization of the higher aspirations of the more enlightened members of the profession. Whatever might be the fate of the question now being discussed, he hoped that the profession would not hereafter accuse the Council of being false to their true interests, and of being possessed of a ricketty backbone. He moved as an amendment, that the bye-law stand as it is.

General Sir FREDERICK FITZWYGRAM, while somewhat acquiescing in the resolution arrived at on this subject at the general meeting, felt constrained to give his vote against the motion. He did not think the repeal of the law would be of the slightest advantage. It was not the object of the Council to admit into the profession incompetent or unqualified men, and he thought there was no one present who had watched the course of the examinations but would admit that if a man had had three chances and three rejections he was never likely to become a useful member of the profession. The rule had hitherto worked well. He had expressed his views on the subject, and would leave it in the hands of the Council.

Mr. HARPLEY referred to the circumstances under which the bye-law was made, and the time and trouble that had been taken before the Special Committee to inquire into the subject had arrived at its conclusion. The object of the Council at the time the bye-law was passed was more especially to get rid of a class of men who could never enter the profession, not having the ability to do so. He agreed with the views that had been advanced by Mr. Collins and Sir Frederick Fitzwygram, and would decline to vote for the repeal of the bye-law.

On the question being put to the vote, two members voted for Mr. Collin's amendment, and twelve for the motion, which was therefore declared carried.

Mr. GOWING gave notice of the following motion :—"Bye-law 36." "But should he not pass his third examination, then shall he pay—should he again wish to present himself—a fee of six guineas at each subsequent re-examination, and seven days prior thereto."

The PRESIDENT proposed the following alteration in bye-law 46 :—

"No examination shall be held unless there be nine candidates for one division of the examination; but if a board be assembled, and there be a candidate or candidates for another division, the examiners for which being within reach, then a board shall be constituted to examine such candidate or candidates."

He explained his reasons for the proposed alteration, which, he thought, would be not only in the interest of the students, but of the profession.

Sir FREDERICK FITZWYGRAM pointed out that the bye-law was passed after due deliberation, and with the view to raise the funds of the college, which at the time were at a very low ebb, and he asked the Council to adhere to the rule to have no examinations unless there were a sufficient number to pay the cost.

After some observations from the President, Professor Pritchard, and Mr. Greaves, Mr. HARPLEY seconded Sir Frederick Fitzwygram's amend-

ment. It was ultimately agreed that the consideration of the question be postponed.

General Sir FREDERICK FITZWYGRAM moved an alteration in bye-law 7, which he said at present provided that the scrutineers shall be elected at the annual general meeting. The effect of the existing rule was that certain gentlemen who were good enough to come to the meeting, were shunted to the outer rooms while the discussion was going on, and where they could neither see nor hear. It was proposed to alter the rule to read as follows :— "At a meeting prior to the annual meeting, the Council shall choose from among the members of the profession not less than six persons to act as scrutineers in the matter of the election of the members of Council, etc." The object of that was that the scrutineers would be present an hour or two hours sooner than the time at which the annual meeting was held.

Mr. P. TAYLOR seconded the motion, which was agreed to.

The proceedings then terminated with a vote of thanks to the President.

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

ON July 8th the half-yearly meeting of this association was held at the Norfolk Hotel, Mr. A. H. Santy, F.R.C.V.S., in the chair. Amongst those who honoured the meeting with their presence were Dr. Jackson, F.R.C.S., of Plymouth ; C. Williams, Esq., F.R.C.S., Norwich ; Dr. R. J. Mills, Norwich ; and J. D. Allman, Esq. ; there were also present Messrs. F. Low, G. G. Whincop, W. Shipley, L. Butters, L. Smith, J. K. Gooch, D. G. Bunting, R. Newson, T. E. Auger, R. Howard, E. Barker, T. S. Barker, and F. Gooch, (veterinary student). Letters of apology were read from the Secretary (J. D. Overed), J. S. Bower, Professor Pritchard, and G. Fleming, Esq., F.R.C.V.S. The minutes of the meeting having been taken as read from the unavoidable absence of the Secretary, the Auditor's report was received, the association being in a very flourishing condition. The officers for the ensuing twelve months were unanimously elected as follows :—Mr. A. H. Santy, F.R.C.V.S., President ; Mr. W. Shipley, M.R.C.V.S., Mr. F. Low, M.R.C.V.S., Mr. E. Barker, M.R.C.V.S., as Vice-Presidents ; Mr. J. D. Overed, M.R.C.V.S., as Secretary and Treasurer. The President then introduced the essayist, Mr. G. G. Whincop, M.R.C.V.S., who read a very instructive and exceedingly interesting paper, " On Matters of an Hereditary Nature in relation to Disease," which was followed by an animated discussion, in which the medical gentlemen and most of the members took part. Mr. L. Butters, M.R.C.V.S., described a case of pelvic abscess in the horse and his mode of operating on the same, with the result, the animal being viewed in the hotel yard by the members. The President then demonstrated his method of extracting the molar teeth of the horse. A cordial vote of thanks was accorded to the essayist, with a request that his paper might be forwarded to the veterinary journals for publication ; and a vote of thanks to the President concluded a very pleasant and instructive meeting, in which the members of the medical profession expressed their entire satisfaction, and that in time, by unity of purpose and a steady application to scientific questions, the association would carry weight and make itself heard on the theories of the day which particularly affect the veterinary profession.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continuation of Mr. Hopkin's Paper on Antisepticity. See page 43.*)

THE air confined in the beds, impregnated with exhalations from the body, and heated by the same means, undoubtedly furnishes an atmosphere remarkably genial for the growth of bacteria and their specific products.

Secondly, to produce Septicæmia there must be absorption of the septic poison, and many of the wounds in our cases are more exposed to the atmosphere, which must have a tendency to prevent absorption, and they are as a rule more isolated. We have seen that bacteria are, under some circumstances, inert; as, for example, in the circulation, than they are in a soil that does not favour their growth, and when, so far as we can judge, they do not produce these septic effects; whilst the Bacillus Anthracis of splenic fever find it a most genial and fruitful home. Again, the process of putrefaction is in abeyance at a low temperature, and the wounds in our patients are not, as a rule, in so warm an atmosphere as those of man, and more ample exit is afforded for any discharge; but independently of Septicæmia, wounds in which the process of putrefaction is at work do not heal well. Even if the septic poison be not absorbed, and we have not its toxic effects to rob us of our patients, we have its retarding influences. The way in which wounds were supposed to heal will be familiar to you all, and the desire to be able so to treat them that there should be no putrefactive suppuration, has led to the search after what is now generally known as the antiseptic method.

The physiological meaning of antiseptic is, "anything that destroys or annuls the physiological properties of septic organisms or their germs."

Many methods have been tried. The chemist, physiologist, and pathologist, by their united labours, have given us a long list of drugs and other agents which are antagonistic to the life of bacteria and septic germs, among which we find chlorine 1 in 100,000, permanganate of potash 1 in 10,000, salicylic acid, carbolic acid 1 in 100, high temperature, and most of the essential oils. After the discovery of these, there was still another difficulty to overcome—how to apply them in surgery in such a manner that they should, whilst not interfering with the healing process, still prevent, or if present, destroy the agents which produce putrefaction. Associated with this subject must now and always stand the name of Professor Lister. He has very kindly sent me a pamphlet, containing the latest and most improved *modus operandi* of his method of applying his antisepticism to surgery. I shall as briefly as possible detail it to you, and after glancing at some of the marvellous results achieved by the use of it in human surgery, call your attention to the cases in our practice in which antisepticity as now practised, or in some other form, may prove advantageous. What it is doing for Ovariotomy. It was my privilege last month to see the operation of Ovariotomy performed by one of our local surgeons. The cyst weighed fifty-six pounds and contained several gallons of fluid. It was a most hopeless case, and although the poor woman died in rather less than a fortnight after the operation, there is good reason to believe that if the operation had not been delayed so long it would have had a happier termination. This operation was suggested by Morgagni in 1761, performed in America by Mr. Dowel in 1809, and successfully by an Italian surgeon in 1815, the woman bearing seven children after it, five single and twins. The after treatments consisted of rigid diet, bleeding next day, tartar emetic, and lemonade—showing some cases will recover any way *vis medicatrix*. In 1850, Laurance writing about it, said the mortality was so great that he doubted if it would not endanger the character of the profession if it was continued. In less than

twenty-five years after this, Lord Selburne calculated that Spencer Wells, by his 500 successful cases, had added 10,000 years to the lives of European women.

In reviewing twenty years' work at the Samaritan Hospital, S. Wells says that in 1855 he went out to the Crimea, returning in 1856. In 1858 he attempted his second case on a poor woman from the Workhouse Hospital, which was successful, and the last he heard of her was that, thanks to his operation, instead of her dying a pauper in the workhouse, she was well and married to a man with a salary of £240 per annum. The last two years he operated on 68 cases with 61 recoveries and only 7 deaths, whilst in earlier years 1 in 3 died.

He then goes on to speak of the antiseptic method, in which he hopes for great things for the future.

Dr. Marion Sims, an American surgeon of note, who has been here on a professional tour, reports that eleven cases in which he saw the operation performed in a fortnight, *à la* Lister, all did well, and expressed himself enthusiastically as to the merits of a method which robs the most serious of surgical procedures of all extraneous perils to life.

A method that enables the surgeon to lay open the abdominal cavity, break down adhesions existing between the ovarian sac, abdominal walls, bowels, omentum, and uterus, secure with ligature bleeding vessels, and by means of sponges remove from these organs and cavity all blood, serum, and other foreign matter, without producing *septic peritonitis*, is to say the least of it, a mighty triumph for modern antiseptic surgery.

Professor Lister, on hearing from Professor Tyndall about air optically pure, tied a piece of cotton wool to the nozzle of a pair of bellows, and on examining the current of air after passing through the wool, and finding it free from organisms or particles, he determined to try cotton wool as a dressing. It answered well until the discharge soaked through, when putrefaction occurred throughout the entire mass of the moistened part down to the wound, even within twenty-four hours. It is only when dry that cotton wool can arrest the progress of microscopic organisms, which have ample room to develop among its meshes when filled with a putrescible liquid. This proves that pus blood and dead tissues do not putrefy through the influence of atmospheric gases, but through the particles of dust which may be prevented entering a wound by filtering the air, or destroying them by means of an antiseptic agent.

Professor Lister's method of procedure in his antiseptic treatment is to wash with carbolic water, one to forty, all instruments, sponges, operator's hands, and the part to be operated upon. He next produces a spray (composed of water containing the acid in proportion one to forty), with which he envelops the operation. In case of the spray failing him, he has what he terms a guard, a cloth soaked in carbolic acid water, with which he covers it until such times as the spray apparatus is again brought into play. Any arteries that may require ligaturing he uses the carbolised cat-gut, which possesses the advantage of not acting as a foreign body; being an animal substance, it is absorbed. It was universally believed, and is still by many, that when you ligature any internal structure, as a blood-vessel, that sloughing of the distal portion must ensue; but latterly it has been proved by practice, by direct experiments, and by *post-mortem* examination, that if the ligature be cut off short and guarded against the *putrefactive process*, such a result is almost unknown. Skin and threads were absorbed in a week. Skin, twelve threads in ten to twelve days. Assuming the operation to be completed, the wound is wrapped in seven or eight folds of antiseptic gauze, being a loose cotton fabric, the fibres of which are impregnated with carbolic acid securely lodged in insoluble resin, to prevent it losing its antiseptic properties; over this is placed a layer or covering of hat-lining.

Carbolic acid itself does not assist the healing of a wound, and in wounds treated in this way there is a copious serous discharge, which is removed by means of antiseptic India-rubber drainage tube or some threads of the cat-gut which are left protruding in a dependent part.

In his record of cases thus treated, he mentions a case of psoas abscess in a man aged twenty-seven, who from the age of eleven had had antero-posterior curvature of the spine, and that he evacuated between fifty and sixty ounces of thick pus, with lumps of curdy material and several spiculæ of cancellated bone. The dressing was changed every four or five days, when the serous discharge became slighter. He is now perfectly recovered and a healthy man. This is only one of several, whilst under the ordinary treatment they are generally followed by hectic or irritant fever and death. For operating in aneurism and hernia it reduces the risk to a minimum, whilst joints and synovial sacks and bursæ can be opened with impunity.

Paracentesis Thoracis. In this it is the only method that will justify the surgeon or veterinary surgeon undertaking the operation. So much for Professor Lister's antiseptic surgery.

I will now, gentlemen, if I have not already trespassed too long on your time and patience, try and show you how a modified antiseptic treatment may be adopted with the advantage in our practice. Wounds, injuries, and operations that are followed by certain diseases, will depend in a great measure upon the state of the system at the time of their infliction, the surrounding circumstances, and the parts affected. We will first consider *castration* in the horse, which is perhaps the operation of all others most liable to be followed by *Peritonitic Septicæmia.* So far as I am aware, this fact has not been published or noted, and it is from personal observation that I have come to this conclusion. Perhaps there is not a member of our profession who has castrated any number of horses, that has not been made uncomfortable by witnessing the painful symptoms exhibited by some unfortunate beast suffering from Peritonitis, as a sequel of the operation be performed some few days previous. Bacteria have undoubtedly a preference for exudates from serous membranes. In these they rapidly multiply and produce their septic properties. It is not often, excepting in castration, that a serous surface and exudate is prepared for their reception in our patients; but whenever it is, the veterinarian may not only expect their presence, but their toxic effect, if they or their germs are within reach of it. Practical lessons are, as a rule, those which speak most forcibly to us, and since I have been studying this subject, one that occurred to me some twelve or thirteen years back has become plainer, and will serve as a good illustration and proof of my argument at the same time. During the early part of my pupilage, it was my misfortune to cause the death of three out of four calves that I performed the operation of castration upon, with a knife that had been used some days before whilst helping to making a *post-mortem* examination. As I was only young and inexperienced, the farmer very kindly put it down to that, and after some little blustering and rather strong language the matter was, fortunately for me, allowed quietly to subside. The real cause would have remained a mystery had not my old tutor, Mr. Schofield, of Pontefract, shortly afterwards seen me using again my castrating knife to cut some decomposing animal tissue. He knew the practical fact that to castrate an animal with an impure knife was followed by death. We now know that if we inoculate an animal with septic matter whilst performing the operation of castration, that it will be followed by *Septicæmic Peritonitis*, as in the cases just recorded. There was another fact demonstrated, that the severity of the disease depends on the amount and quality of the inoculation. The first calf operated upon was the most rapidly fatal case, whilst the last done was not fatal, and the last but one lingered for some time before succumbing.

That Septicæmic Peritonitis may follow when clean instruments are used, will be best shown by relating to you another case that came under my notice a few years back. I operated on a three-year-old colt belonging to a trainer, and stabled in a box near the tan-yard. All went well for some time, excepting that there was Schirrous of one cord. This was removed in the ordinary way, but was followed by Septicæmic Peritonitis and death.

That it is not caused by carelessness in operating, as the public generally suppose, will be proved by the fact that Professor Williams told me every colt operated on and kept in proximity to a dissecting-room died, and when we were students we would not operate on a colt in the college premises. On account of this we can readily trace the cause of infection in all these causes—(1) by the knife in the calves ; (2) from the tan-yard in the case of the three-year-old colt ; (3) from the dissecting-room. In these cases remove the cause, and I should myself try some antiseptic treatment when suspected.

Professor Chauveau has also demonstrated another fact in connection with operations and state of the system. In the operation of "Bistournage," which consists in twisting the spermatic cord, without making any external wound, in such a way that the circulation is permanently stopped ; and of the thousands of operations of this sort which are performed annually on the Continent, none are ever followed by infective consequences. But when he introduced a dose of septic matter into the blood-stream, the textures around the organ became the seat of acute diffuse inflammation which soon extended to adjoining parts, and in some cases terminated fatally, depending on the amount of septic matter introduced.

The immediate cause of the septic inflammation of the testicle was evidently the injury to which it had been subjected, but no infective process would have developed itself had it not been that masses of septic matter were at the time of the injury circulating in the blood-stream, some of which were conveyed to the injured parts and then became centres of infective action. On the other hand, the constitutional effects which were produced by the injection of the septic liquid into the blood, would have passed off without endangering the life of the animal if there had been no injured organ to afford the necessary conditions for the development of a septic focus. Predisposition, as well as state of the system, will no doubt, as before stated, play a part, because wounds do heal without Septicæmia, when exposed to what in another case proves a source of infection. Parturient Peritonitis and Metritis illustrate this, mares being most prone to absorb septic matter after parturition, whilst cows are the reverse ; difficult cases of parturition in the one, with abrasion of the mucous membrane, being much oftener followed by disastrous consequences than in the other.

Two cases of Purpura Hæmorrhagica that came under my notice contain instructive lessons as to how, without care, we may be the means of producing the very state of things we are most anxious to avoid. A black five-year-old gelding affected with Pupura Hæmorrhagica was brought from an impure and badly ventilated stable to our premises for treatment. The effusion into the areolar tissue around the respiratory passages of the head was so great that it became necessary to perform tracheotomy. About three days after this we noticed a nasty offensive ichorous discharge from the wound, the animal dying in eight days—a well-marked case of what was then called "Pyæmia," or the Septicæmia of to-day. I have now to acknowledge how unintentionally I was the means of inflicting an injury upon a member of our Association, and one of his clients. He asked me to see a case of Purpura under treatment in his infirmary, and which I suggested would be relieved by the operation of tracheotomy ; and in response to a request, I sent him a tube, as those he had were either in use or not to hand. We unfortunately sent him the one that had been used in our case that died

from Septicæmia. The result, although my assistant assured me he had thoroughly cleansed it, was most disastrous, his case dying some time afterwards, also a well-marked case of Septicæmia. In the human surgeon's practice they do not now consider it safe to perform tracheotomy in hospitals, unless the patient is kept in an antiseptic steam tent, that is a tent with steam mixed with carbolic acid. I can imagine some of you saying to yourselves, Well, this is all very well where it can be applied, but we can never do to be bothered with all this cumbersome detail. I will, without enlarging, try and demonstrate to you how we can with the greatest benefit apply a modified form of antiseptic treatment in our cases. I have here a portion of the shaft of a cart, which in a collision was driven into the muscles of the thigh of a blood chestnut mare. It entered about four or five inches above the right stifle and pursued a course from before backward, coming out through the biceps rotata tibialis muscle. The force must have been terrific, first of all to make it pierce the skin twice, traverse all that mass of muscle, and after making an indentation on the face of the dash-board, it was broken off as far as you see it, and the mare was brought from Cheetham Hill Road to Moreton Street, with this buried in the muscles of the thigh. Very considerable force was required, after a rope was passed through the D, to withdraw it. Now the treatment in this case was strictly antiseptic, and although exceedingly simple, most satisfactory. We first passed a large strong probe armed with cotton wool and saturated with carbolic acid and glycerine into the wound to destroy any germs; then so fastened a large piece of lint saturated with the same that it covered both external openings. No water in any form whatever was allowed to go near it—no fomentations, no cold-water pipe; simply wiped away the discharge with dry materials, as tow or wool, and kept the lint saturated with the carbolised oil or glycerine. In a fortnight the posterior external opening was closed; in three weeks, from the anterior one just a drop of sweet pus occasionally oozed; whilst in less than four weeks it was entirely healed and the mare discharged. In a case like this it would be almost impossible to prevent suppuration, but this method will prevent putrefactive suppuration.

The late Mr. Haycock used to say wounds did better without water; that it washed the healing away. It is needless to say that I was then not open to conviction, and although he was wrong in his theory, the fact he had noted was correct as all facts must be, and will, if not now, at some future time be acknowledged by all surgeons.

It is astonishing what prejudice custom creates. It is said of an old departed yet celebrated French surgeon that the whole body of surgeons in his day condemned him because he had the courage to operate on the wounded, after a great battle, before the boiling oil that it was the custom to pour on wounds and the stumps after amputation, could be procured. I say, his professional gentlemen shunned him as one likely to bring discredit on his calling, because he had noted the fact that his cases did better when treated without the oil, and he therefore determined to discontinue its use.

Whilst speaking of bygone days, I would just remark that no doubt many of the old severe dressings applied to wounds were too antiseptic, and that they not only destroyed the germs, but the tissues too. The operation of neurotomy is perhaps one of the most convenient in our practice in which to apply antiseptic treatment, which can be done in the following manner. Under the limb to be operated upon place a dry clean towel over the straw, touch with an antiseptic, as carbolic and glycerine, the skin to be cut, and your instruments, and instead of using a sponge, if there should be hæmorrhage, use the dry towel. After the operation, touch the whole of the interior of the wound with the antiseptic dressing; put in a wire or cat-gut suture if necessary; then a small pad of cotton wool soaked in the dressing, next to the wounds; over that

another pad of dry cotton wool and a *dry* bandage, which allow to remain undisturbed until such time as you think the wounds are healed. With this method there is little or no swelling of the limb, no suppuration ; and the last case in which I operated the mare was at her usual work in seven days, healed and sound. One word of warning. When you have a constitutional or strumous diathesis in your patient, antisepticity will not remove that.

Summary.

Discovery and proof that the germs which produce, under favourable circumstances, bacteria, are floating about in the air. How they got there we are, as yet, unaware ; but that whilst the germs are aerial the parents are aquatic, and "prefer swimming to flying." They are capable of rapid growth by means of division, and are of various kinds. Whilst some appear harmless, others are or have the power of generating specific properties. Bacteria, of some kind, are necessarily present before putrefaction can take place ; this is proved by the fact that matter most prone to take on putrefaction will not do so, if only pure air is permitted to come in contact with it, if the air be either filtered or rendered sterile by the use of some antiseptic agent, that Septicæmia is due to the introduction into the system of septic matter, which is a product of putrefaction produced by bacteria.

The agents that destroy this and render anything containing it sterile, are termed antiseptic agents. Antiseptic agents are not to heal wounds, but to place them in such a state that the healing process only will be allowed to operate. In conclusion, gentlemen, this is an important subject that I have tried to place before you. It contains but little matter the result of my own individual effort ; for the main features we are indebted to the special scientists. My part has been simply, yet efficiently, I trust, to apply them to some practical purpose ; and whilst science, whose soul is explanation, halts with hostile front at mystery, who shall say, until the strife is over, which of her children shall most deserve the victor's wreath for his crown ?

An interesting discussion followed, in which the following gentlemen took part :—Messrs. P. Taylor, W. A. Taylor, W. Pallin, R. Reynolds, D. Hutcheon, Mr. Whittle, Dr. H. Briggs, Mr. Paton, &c.

A cordial vote of thanks was accorded the essayist for his very admirable paper, and also to the chairman. SAML. LOCKE, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

THIS Society met on June 5th, Professor AXE, in the chair. The SECRETARY read the minutes of the last meeting, which were confirmed.

Mr. BANHAM read a description of a cyst as follows :—

This specimen was sent to the Editor of the VETERINARY JOURNAL, and in the absence of Mr. Fleming, for whom I have to apologise for not being here to explain the particulars of the specimen himself, I will endeavour to do so for him. The following is a copy of the letter sent with it :—

Midmar, *May 29th.*

Dear Sir,—I have forwarded to you, per rail to-day, a testicle which I removed from a "Rig" colt the other day. The testicle contained some serous cysts, and what is apparently a hair from the tail of a horse. I have retained a small portion of the hair to examine with the microscope, as I am very busy just now. I never heard of anything of the kind, so far as I at present remember. I will send you further particulars in a few days.

I am, yours, etc.,
J. R. DEWAR.

The further particulars were received this morning, and are as follows :—

Midmar, Aberdeen, *2nd June*, 1879.

George Fleming, Esq., Editor of the VETERINARY JOURNAL.

SIR,—According to promise I now send you fuller particulars about the testicle I sent you some days ago.

The animal from which the testicle was removed is a two years old Clydesdale colt, black in colour, in good condition; perfectly healthy, and had always been so, and belongs to William A. Mitchell, Esq., Auchnagathle, Aberdeen. I was called to castrate the colt about a year ago, and as there were then some suspicions of his being a "Rig" I examined him as well as I could without casting him, and failing to find more than one testicle I advised the owner to leave him for a year, as he was not very troublesome. I had little hope, however, of the other testicle making its way into the scrotum in the interval, as the one already there, the right one, was more than double the ordinary size, and apparently healthy.

As the colt was beginning to give annoyance, the owner determined to have the testicle that was in the scrotum removed, and on the 26th May last I had him cast, and after a vigorous search both externally and per rectum, and failing to find the missing testicle, I removed the one I could get by torsion. There seemed little difference in the size of the testicle since last year. I intended removing it by clams, but finding the cord much smaller than corresponded with the size of the testicle, and having, a few instruments ready, in the hope that I might detect the presence of the other testicle in the inguinal canal, I at once, as I have said, removed it by torsion. It was not until I had exposed the testicle and grasped it in my hand, that I observed anything wrong with it—its intense hardness at one point taking my notice. All the structures exposed, other than the testicle, seemed perfectly healthy and in a normal condition. On afterwards making a longitudinal incision into the testicle, I found five cysts containing a transparent, serous-like fluid; the largest containing, perhaps, about an ounce of fluid, the smallest about a dram. You will see that part of the testicle is of a gristly cartilaginous nature, and that there is a piece of distinctly osseous tissue also present. What seems undoubtedly to be a hair from a horse's tail was curled up in an almost dry cyst-like space, very much as you will have found it, one end of the hair being free, and standing out two or three inches when perceived. I left the whole as much intact as possible, so that you might see and examine it for yourself.

I have heard of bony tissue being found in the testicles, but I don't think I ever heard of a hair such as that sent you being found in one. I have often seen hairy tumours, or rather cysts lined with hair-producing tissue, in the vicinity of the skin, which become gradually filled with hair, to the exclusion of their fluid contents, if allowed to remain long enough. But should you fail to find a hair follicle and papilla in the testicle, the question naturally arises, are we to look upon the hair as a foreign body? also, how did it come to be there? Was it introduced into the vagina of the colt's dam by the penis of the sire? and has it from thence found its way into the uterus, and, remaining aseptic, been no obstacle, save from its physical properties, to the impregnation of the ovum and development of the fœtus, been involved in the fœtal structures, and becoming ultimately lodged in the testicle, remaining there until now?

I hope to have your opinion regarding it.

I am, sir, yours respectfully,

J. R. DEWAR.

The specimen before you gentlemen is, I think a remarkable one; for we see, as Mr. Dewar remarks, the hair more closely resembles that of the tail, and not, as is the rule I believe, of the general integumental hair; moreover,

when it was first received there were as many loose hairs as are attached, showing I think, that they had previously been shed, and I have no doubt would have filled the sac as age advanced ; the hairs being annually shed.

In answer to Mr. Dewar's first question, I think we may say it is not a foreign body, nor can it be looked upon as being introduced into the uterus *per vaginam* ; for I think you will all agree with me, that even if a foreign agent gained access to the uterus in the way he describes, which is rather improbable, it could scarcely become imbedded in any organ or tissue of the embryo, especially into such a remote organ as the testicle. Mr. James Law, in the *Edinburgh Veterinary Review* for 1863, gives an account of a dermo-pilous cyst, situated beneath the Levator Humeri muscle of a bullock. The walls of the cyst resembled delicate skin covered with an epidermoid structure, and contained numerous hairs, about an inch long, resembling those of the common integument of the animal. The cyst was filled with a granular substance, having a repulsive odour, and seemed to be sebaceous matter ; under the microscope it appeared to be chiefly withered and flattened epidermoid cells, granular matter, and a few oil globules. He goes on to say that cysts containing hair, and less commonly teeth, bones and other structures, are most frequently seen in the ovary, but have been met with in the uterus, abdomen, anterior mediastinum, scrotum, testes, stomach, and intestines, or bit, tentorium, palate, and neck. As to the origin of these abnormally-situated structures, Dr. Jones denies their being the remains of partially absorbed fœtuses, and considers them to be erratic productions of the Graafian vesicles acting under the influence of some unnatural stimulus ; but this view does not account for their appearance in other parts of the body. When they occur in the dura mater, it is possible that they may arise, as Dr. Ogle says, from inflammation being set up between the dermis and dura before the fontanelle is closed, causing union of the two structures, and a portion of the skin being drawn inward, and finally enclosed in the cranium. But this does not explain the formation of these cysts in such distant organs as the testicle, or in Dr. Gordon's case, in which he found a tumour containing portions of skin, fat, serous fluid, sebaceous matter, and what appeared to be the bones of the upper jaw, with seven well-formed teeth imbedded in it, in the anterior mediastinum of a young woman twenty-one years of age. Nor do I think that Professor Vrolik's idea that they are due to the enclosure of a fœtus, or a portion of it, within the body of its brother or sister—*fœtus in fœtu*—will hold good in such cases ; but I think we must look upon them as congenital in another way : probably due in some way or other to the anomalous division or folding of the *blastoderm*. I do not know, myself, sufficient of embryology to enable me to propound a theory as to how it could be possible for a portion of that layer of the *blastoderm* which forms the skin to become so entangled, so to speak, within the layers which form other organs of the body ; but it seems likely, as far as I can see, that this is possible, although perhaps it may not be within our power, at present, to explain the process satisfactorily.

Mr. BANHAM said he should be pleased to hear the opinions of any members, as to the formation of hair cysts in remote parts of the body.

The PRESIDENT said the specimen before them was one of considerable interest, especially in regard to embryology, rather than pathology. The particular form of development, exhibited in the instance before them was by no means uncommon. He had seen such developments in the liver, in the mesenteric glands, and in several instances as dermopile cyst. Only a short time ago a cyst had been forwarded to him of that character, which had, he believed, been removed from near the shoulder of a beast, and was of a very similar nature to that described by Mr. Banham, from Mr. Law's account, except that it contained a quantity of sebaceous matter, in all probability

derived from the follicles which were imbedded in its walls. They were of a very benign character, almost incapable of doing serious harm. It was an interesting question, as to how such productions occurred in the remote parts of the body. Probably, as Mr. Banham had suggested, and as he believed was generally considered, they arose from some eccentric or erratic division of the blastodermic membrane.*

Mr. SHAW enquired how long the cyst exhibited had existed.

Mr. BANHAM replied that the colt was two years old, and that probably it had existed in the fœtus.

The PRESIDENT then called upon Mr. Steele, who, on rising, asked permission to add a few addenda to the remarks made by him on Bacteria at the last meeting.

Mr. STEELE said that it had occurred to him that it would form an illustration of the importance attached to the subject of Bacteria, by the scientific world in general, if he made notes upon those papers and works upon the subject which had come under his notice in the month subsequent to the reading of his paper ; and he then proposed to give them a short summary of those notices, and to show how they bore upon the paper he had the honour of presenting to them at last the meeting. He had carefully looked through the literature of the subject so far as available to him ; and it would be evident from the number of references that there must be very considerable scientific activity in relation to the question. In the first place, the Pathological Society, as usual, had come to the front in this matter. The Pathological Society, he believed, under its late president, Dr. Murchison, appointed a committee to inquire into the subject of pyæmia, and septicæmia. A summary of the result of that enquiry would be found in the *Medical Times and Gazette*, of 31st May, 1879, and from that summary of the report it would be seen that the committee divided the subject of septicæmia into two parts : septic intoxication, and septic infection. Cases of septic intoxication were such as resulted from the introduction of an extremely large portion of septic material into the system, leading to death in a very short time. In cases of septic infection a small amount of infection was introduced into the system, which propagated, and after a time produced its effects, which effects were not in the slightest degree proportioned to the disease.

Arguing from the cases which have been observed in man, they find on record twenty-seven cases of septic infection, as compared with two of pure septic intoxication. Of pyæmia, they record 127 cases within a limited period. The importance of the report, as bearing upon the particular subject of Bacteria, was shown by the fact that in blood taken from eighteen of those patients—the only cases examined—Bacteria were discovered. The committee reported the observation of six forms of Bacteria, all of which forms were comprised under the different species, as he had termed them, in his paper. There were, first of all, the simple jointed filaments, which he had indicated by a series of dots, placed in a chain, termed the leptothrix form ; then certain ovoid bodies ; then large spherical bodies ; then Bacteria, rod-shaped or true Bacteria ; and, lastly, protoplasmic rounded bodies, corresponding to large micrococci. The conclusion these gentlemen arrived at with regard to the organisms was, that they were satisfactory as evidence of the existence of disease ; but they were not in the position to state that they were the cause of the disease. Another important point of observation, as bearing upon the paper, was one which had been recently published by M. Toussaint, with regard to the nature of Anthrax, and the manner in which death was brought about. They found the organisms extremely prevalent in

* Professor Gurlt, in his writings, mentions having found hair cysts in the testicles of horses.—ED. *V. J.*

the blood-vessels, so as in many cases entirely to block them up. That confirmed M. Toussaint's theory, that death was produced by mechanical asphyxia, the lungs being locked up by the presence of micrococci. In some instances the report described the vessels as being ruptured, or partly absorbed, and the micrococci were seen suspended in the contiguous tissues. In the larger vessels they formed a layer of uniform thickness, lining the walls. Their distribution in the various organs was irregular. The relation to each other of these several and different forms, which he had mentioned—whether they were simply varieties of the same species, or whether they were distinct species—the committee were not in a position to explain ; but the members came to the conclusion that certain chemical changes in the blood were necessary for the development of these organisms ; and that such chemical changes in the blood might be induced by the introduction of poisonous matter. In the next place, the *Medical Times and Gazette*, of May 24th, 1879, contained a paper by Mr. D. Watson Cheyne, house surgeon to Professor Lister, of King's College hospital. Mr. Cheyne had observed organisms underneath antiseptic dressings. This was a matter to which, evidently, great importance was attached in the medical journals. There was a leading article, he believed, in each of the journals upon the subject.

These various organisms which were found beneath the antiseptic dressings were always in the form of micrococci, rounded cellular bodies ; and the method which Mr. Cheyne adopted was to inoculate a cultivating fluid. At the last meeting he had mentioned three, namely, Pasteur's, Lister's, and Koch's. The cultivating fluid used by Mr. Cheyne was one he did not mention, namely, the cucumber infusion. This was kept at the temperature of the human body for a certain period, and the micrococci were found to undergo active development, and to be converted into the leptothrix form and to become connected in cells in a longitudinal series, but were never seen to assume the true bacterial or rod-like form. From that fact Mr. Cheyne considered himself in a position to state that the micrococci are distinct from true Bacteria. He also adduced certain strong arguments to bear on the subject ; his first argument being that he had never observed a micrococci become a Bacteria, or *vice versâ*. The second observation being that the result of the micrococci are chains that seemed to form several varieties, which developed at various temperatures ; and third, that these micrococci do not disappear so quickly in a sodium carbonate solution as did the Bacteria. Then he quoted the observation of Koch, who found that micrococci stain with Hæmatoxylen, while Bacteria do not. That was one of his principal arguments. He also showed that while the micrococci by their development only give rise to a faintly sour smell, the Bacteria give rise to the pungent odours which accompany true putrefaction. These arguments of Mr. Cheyne's were treated at some length in his paper, but they seemed to be scarcely satisfactory, because the micrococci might not have been in a satisfactory condition to become the true bacteria under his experimental conditions. There was also this point upon which he laid stress, namely, of the micrococci being stained with logwood was not conclusive, because, as they knew, organisms undergo remarkable changes in chemical structure at various stages of development. He showed that these micrococci which occur under antiseptic dressings are innocuous, and when introduced into the system produce no ill effects. But there were certain micrococci (as they had seen at the last meeting), which produce very deleterious effects. Some had been observed in vaccine, others in the discharges in Diptheria, and so on. He found, also, that the micrococci underneath the antiseptic dressings did not appear till after the dressings had been on some time, and a considerable amount of discharge was collected underneath the dressings ; so that the carbonic acid was neutralised to a considerable extent by the micrococcic matter contained in the discharges. It

was well known that carbolic acid when applied to a wound underwent a certain amount of volatilization. Mr. Cheyne made a further important observation with regard to the relative behaviours of the micrococci and Bacteria in certain solutions. Bacteria developed much more rapidly than the micrococci in the simple cucumber infusion. When Bacteria and micrococci together were first introduced, if a certain amount of carbolic acid was introduced into the infusion, it was found that the Bacteria ceased to develop rapidly, and the micrococci were capable of undergoing a considerable development in that carbolic acid. By graduating the strength of the solution micrococci could be obtained which would develop in rather a strong solution of carbolic acid. Mr. Cheyne was inclined to consider that the micrococci came from that, rather than that they were introduced from the tissues of the body. This led them to another point, on which Mr. Cheyne laid much stress, namely, whether the germs exist in the living tissues. They would remember that in his paper he had alluded to that point, and had discussed it at some length. The general opinion seemed to be rather in favour of the view that the germs of bacterial organisms exist in the living tissues, ready, under certain circumstances, to develop freely. Mr. Cheyne had made some experiments on tissues; but he judged that previous experiments had been unsatisfactorily performed, and that the tissues did contain the germs of micrococcic organisms.

In addition to these, he found that an important work has quite recently been brought out by Dr. Lewis, a medical man in the army, who has practiced in India. The book is published in Calcutta; the author is an authority upon those Nematode-Hämatoza forms of parasites which occur in the blood. This gentleman had determined the presence of certain new forms of spirillum in the blood of some species of rats which he had examined, and he found that these spirilla abound in the blood of healthy rats, and apparently cause the animal no inconvenience; and he asks, "Why may not the Bacteria and the spirillum, to which we are accustomed to attribute the recurrent fever, and septicæmia, and also the various forms of Anthrax; why cannot they occur in the blood without necessarily giving rise to inconvenience?" The common theory of the manner in which bacilli produce their effects is, that that they bring about asphyxia; but from the observations of Mr. Toussaint, if they followed his views in the matter, they could understand that it is not through asphyxia that these minute vegetable organisms produce their effects, but rather by blocking up the passages mechanically. An important observation was noted in the review upon the book by Dr. Bastian, as originating from Nägeli, of Munich, one of the highest authorities upon minute vegetable organisms, who said:—"I have, during the last ten years, examined some thousands of different forms of Fusion, Yeast-cells (Selozomycetes), but, excluding Sareiuse, I could not assert that there was any necessity to separate them into even two specific kinds."

They would remember that in his paper he had alluded to the fact that whereas some biologists consider a number of organisms to be distinct forms of micrococci and rod-like Bacteria and Leptothrix and so on, others consider them simply a species of the same organism modified to adapt it to particular circumstances. They would perceive that Nägeli, of Munich, seemed to agree in that opinion. Another important observation had been made: that organisms, in every way analogous to micrococci, had been found in animals suffocated—a point of very great importance; but it must be remembered that there were certain bacilli which were so similar to micrococci, that they could hardly be distinguished, even under the microscope. He had mentioned to them that Leptothrix was the cause of the peculiar taste and dryness of the mouth, and of the fur on the tongue which is experienced on waking in the morning. Then there was a com-

munication to the Royal Society, at its sitting on the 24th April, by a Dr. Butlin, in which he had proved that that was so; he mentioned micrococci and Bacilli-subtilis as occurring in all cases of fur in the month. With respect to the further literature of the subject, there were frequent notices on Charbon in the *Recueil de Medicine Vétérinaire*, and one of the most important points mentioned was in a paper upon "Puerperal Fever," discussing whether that disease in the human female was due to minute organisms. There was a little light thrown on the subject by a communication made to the Paris Academy of Sciences, not long ago; namely, a description of the means of reproduction of bacilli, termed bacillis-puerperalis. He had observed it in 1876, when some of the numerous bacilli in the blood of a woman, who had died in child-bed, were placed in Pasteur's nutritive liquor; so that the matter of the presence of bacilli in cases of Puerperal Fever had been at least provisionally cleared up, though the observations required confirmation.

He might also note that before the Academy of Sciences in Paris, some observations had been made by Mons. P. Migale on the organised dust held in suspension in the atmosphere, and he might tell them that the conclusions advanced were rather important as bearing on the subject. The author deduced the following general results concerning the organised corpuscles of the atmosphere, which exceed $\frac{1}{2000}$ millimetres in size—1st. The prevalence of these in the air is low in winter, increases rapidly in spring, remains almost stationary in summer, and diminishes in autumn. 2nd. Rain always arouses these organisms into activity.

That would explain the point now under discussion, as to why outbreaks of Anthrax occurred, especially after floods, and after wet seasons.

The author came to the conclusion that temperature and humidity influenced their production, and he found them in collected rain-water, though collected with care. That was important, because it was rather doubtful whether the Bacteria existed in ordinary air. It was allowed by everybody that these bacterial putrefactions existed in the water, but whether in the air was disputed by some. Now if they existed in rain-water, which had just passed from the air and been collected with all due precautions, then they were confirmed in the conclusion at which they had arrived, that they were present in common air.

An important observation on the subject occurred in the *Annali del Royale Academia d'Agricoltura de Torino*, the journal of the Agricultural Society of Turin, by Professor Perroncito, on typhoid epizootic in fowls, and the bacteria had an important relation to two remarkable diseases which occur in silkworms, which have been treated of by M. Pasteur. Then, a little nearer home, he observed that in the professional journals it was mentioned that Professor Williams was to read a paper on Bacillus Anthracis at the North of England Veterinary Medical Association; and, lastly, he had been that day very hastily examining a work on putrid intoxication and septicæmia, by M. Gutman, of Russia, which was brought out at Dorpat. That work treated of organisms which give rise to putrid intoxication; and gave a lithographic plate containing six figures of Bacteria.

The book also furnished a very capital *résumé* of the works of different authors upon the nature of putrid intoxication and septicæmia. Among the more remarkable points he had noticed in the work, one was the peculiar figure which was given in the plate of the spores. They knew that he had spoken of these spores as being capable of resisting external influences in a very remarkable manner. Those spores were represented, not as simple rounded circles, but with a little tail-like appendage to them. That was a feature he had not noticed previously in any literature on the subject to which his attention had been drawn, and they would see, from those points which

he had brought before them, that his assertion that the subject was undergoing very considerable investigation was amply confirmed.

Mr. MOORE, Senr., inquired what was the practical bearing of the subject.

The PRESIDENT said that questions would be replied to at the end of the discussion. He might remark that the subject so ably brought before them by his colleague was one of the highest possible importance, trenching on ground in various directions, and dealing with large questions, including that of the origin of life ; entering also into the question of pathology. It was more especially in its pathological aspect that they would have to consider it. He was not at all surprised that there was so little to be said about it, inasmuch as the facts were as yet incomplete, and so widely scattered and apart from one another that it was very difficult indeed to draw conclusions ; and not only difficult, but as yet dangerous, while the facts remained in their present conflicting condition. Nor was there any wonder that the facts should be as they were, seeing the peculiar nature of the material, and its very peculiar physical properties, and our, as yet, defective means and applications to differentiate them, and to classify the objects referred to by the reader of the paper. Considering all these facts, he thought they could not wonder there was so little to say about it. The wonder rather was that they had arrived at the amount of knowledge already possessed in connection with the subject. They knew that these organisms existed ; they knew that they were capable of finding their way into the blood, and they knew, to some extent, that they were capable of doing damage ; but they did not know, they had no full account of, their life's history ; they did not know what conditions precisely influenced them ; they did not know to what extent, or how those influences operate. Until such time as those conditions could be fairly established, it would be very difficult, and not only difficult, but as he had said, dangerous, to draw conclusions. No one could feel more grateful than himself, to the reader of the paper, for having brought the subject before them. It was one which, if it did not just now furnish them with any fact which they could apply, would certainly bring before them matter which was worth thinking about. It would, further, prompt them to break ground which they had not previously done ; it would give them a tendency to follow in that particular path which he was sure, sooner or later, must lead to very valuable results. He thought the Society owed a debt of gratitude for the paper contributed to them by Mr. Steele.

The SECRETARY asked if the Leptothrix Buccalis was the same as the Algæ, the vibrion found in the saliva in the morning, leading to dryness of mouth. Amongst the list of antiseptics he thought the reader of the paper had omitted two, viz., hot water and sulphurous acid, being introduced commercially by Professor Tuson, under the name of Sporokton, which he understood to be a most powerful antiseptic.

Mr. GERRARD said he, unfortunately, had not the pleasure of hearing the original paper read, but he could quite endorse what the President had said to the effect that it was a most important subject, one, in fact, that they had very great need to be enlightened about. They should feel grateful indeed for such men as Mr. Steele and the President for bringing forward and illustrating the subject. It was a very abstruse subject ; one which ordinary mortals, like himself, engaged in their professional avocations, could hardly turn their minds closely to with anything like advantage ; therefore, they should be the more grateful to those who had the means of studying it when they brought it forward, so that the minds of other members of the profession could be directed to it, and profited thereby. The subject dealt, as the President had said, with the origin of life, and had reference to the subject of pathology. He did not know whether the reader of the paper took the ground of spontaneous generation, or the opposite. With regard to its appli-

cation to pathology, he did not know what his ideas might be with regard to the amount of causation, that he had ascribed to it in the production of disease ; that is, whether he regarded it as the cause of disease, or only as the effect ; whether these bacteria, and these organisms, were produced in the system after the diseased process had sprung up, or whether they were, really and truly, themselves the cause of the disease. He thought a great many pathologists of the day seemed to hold the opinion that they were really and truly the cause of a great many diseases which, hitherto, had been thought to rise, altogether, from different causes. For instance, Splenic Fever, which came very close home to themselves, and which he had seen a great deal of, was generally ascribed to, or thought to be caused by, bacteria. Well, they had at least not proved that it was so caused. In his opinion it was an assumption really not proved, for while they were always sure that these bacteria were there, still it was not proved that they were the cause of the disease. He did not see how they always could cause the Splenic Fever, or there would be very much more of that disease than existed ; in fact, if the bacteria were the cause of all the diseases that the advanced pathologists of the day ascribed to them, he did not see why they should not find them very much oftener. So he took the ground that they were not the causes of the diseases, but their results. It was pretty well proved that you could find them everywhere ; there was not a secretion of the body, or a cell that did not contain them. The same in milk fever ; they only found milk fever, or puerperal fever under very special circumstances, but if these bacteria, and these low organisms were the cause of the diseases, why did not the diseases occur in almost every case? He would like the essayist's or the Chairman's opinion on this subject, for if the Bacteria produced the disease, they would have to alter very materially their views of pathology.

Mr. A. BROAD said he did not think it right to jump to the conclusion that the diseases could not be produced by these Bacteria; for when they inoculated rabbits with the forms, they instantly took the same disease, showing that they had the power of inducing disease; and whether that was the ordinary way of causing Splenic Fever or not, doubtless these organisms could induce the disease in a healthy animal.

Mr. GERRARD said he granted that when once the germs were produced you could inoculate and produce the disease, but he denied that they were in every case the cause of the disease. He held there was always some physiological change taking place before they could manifest their deadly influence; but that, once manifested, you could inoculate and kill as fast as you liked.

The PRESIDENT said he believed the view held in respect to them was that it required, in order that they might operate pathologically, that there should be a previously deranged condition of the system, that the system was not in a state of health. He thought in all probability that might be put in such a manner as somewhat to modify the views expressed by the last speaker, which he did not say were not in some measure correct. If, for example, they took a portion of the blood of an animal affected with Anthrax, and were to implant that blood in the tissues of another animal—whether rabbit, or guinea-pig—and no matter what state of health the animal may be in, as sure as they implanted that blood in the animals, so surely were the tissues destroyed by it. That fact, he thought, would militate against the idea just expressed—at least, to the extent of modifying it; because they could not suppose that all those animals' systems were in a deranged condition, for that would imply a universal derangement. So far as the Anthrax organism was concerned, there did not seem to require any particular or special condition of the system in order to give rise to its action. For himself he was disposed to think that this organism, pathologically, was extending itself a little too

rapidly; that the ground was not being sufficiently cleared; that they were attributing diseases to organisms, when he thought (as sooner or later they might find) they were due to other causes. As had been very justly remarked, organisms may usually be found in the tissues of animals, and he had himself so found them under all circumstances of disease. For instance, in Pleuro-pneumonia, and micrococci in Pleuro-pneumonia lungs, in myriads; but it would hardly be said that micrococci were the cause of the death of the animals which died from those diseases. It was a question which required the greatest possible care in bringing together data, and in seeing that those data were founded upon a sure basis before they formed conclusions. He thought it would be found that some of the diseases of the lower animals, which had been recently pointed to as having their origin in the presence of these lower organisms, originated in some other cause.

Mr. MOORE, sen., said that if those organisms were the cause of disease, there would only be one disease.

Mr. MOORE, jun., proposed the adjournment of the discussion till the next meeting. It was duly seconded and passed.

The PRESIDENT said he was pleased at their decision to adjourn the discussion. There were many points about which he would like to say something. He believed the talking sometimes, if it did not do the hearers good, might do the speakers good; and that ventilating a subject of that description was one way of making them familiar with it to a greater degree than by merely reading through a few pages in a book.

JAMES ROWE, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly council meeting on July 2nd, the Hon. W. EGERTON, M.P., reported that Dr. Greenfield had laid before the Committee a statement respecting the experiments which he had been carrying out, and proposed to continue, with regard to Anthrax, or the disease known as Quarter-evil. They recommended that the grant be expended in the purchase of animals to test the forms of Anthrax in cattle and horses, and the possibility of diminishing the virulence of the disease by inoculation. As these experiments are being carried on, the Director of the Brown Institution is desirous of having information whenever an outbreak of Anthrax occurs, and he would be much obliged by any such case being immediately reported by telegraph (to the Brown Institution, Wandsworth Road), in order that he may make a personal investigation. The Secretary had received a letter from the Metropolitan Board of Works, enclosing a report of the action of the Board in carrying out the Cattle Diseases Acts in the metropolis. The Committee would be glad to accept the offer of the Board to give them any information in their power which might be of interest to the Committee, and to receive any communication from them.

This report was adopted.

NEW MEMBERS OF THE PROFESSION.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons held July 3rd, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. James Ingham	... ...	Shuttleworth, Bury, Lancashire.
„ John Soulsby	... ...	Whitehaven.
„ William Roach	... ...	Crediton, Devon.
„ Ernest Edwin Batt	...	London.
„ Herbert Hall	... ...	Wragby, Lincolnshire.

Mr. Kirtland Smith ... ... Louth, Lincolnshire.
„ Frederick John Short ... Torquay, Devon.
„ Charles Harry Smyth Neate Lewisham, Kent.
„ Henry James Kelly ... Foulness Island, Essex.

Mr. Ernest Edwin Batt with great credit.

The following students passed their second examination on July 5th :—

Mr. William Frederick Wright.	Mr. Henry Martin Rule.
„ Enoch Green.	„ Frederick William Whitney.
„ Johnson William Carlisle.	„ John Darby.
„ William Francis Mulcahy.	„ Frederick Elworthy.

Messrs. Johnson William Carlisle and Henry Martin Rule passed with great credit.

The following passed their first examination on July 7th, 8th, and 9th :—

Mr. William Taverner.	Mr. William Davidson.
„ R. Ephraim Liston Penhale.	„ Alfred Charles Wilde.
„ John Sibary Wheatcroft.	„ Evan Wynne Williams.
„ John Henry Penhale.	„ Joseph Rowbotham Kinsey.
„ Tom Cooper Fletcher.	„ Henry Charles Harrison.
„ John Albert Bown.	„ Charles James Humphrey.
„ John Penberthy.	„ Charles Curson Clark.
„ Charles Edward Cockram.	„ John Thomas Holmes.
„ Thomas Pottinger.	„ John Halstead Wood.
„ Henry Hubert Roberts.	„ Arthur Everard Barlow.
„ T. J. Patrick McGuinness.	„ William Green.
„ William Freeman Barrett.	

Mr. John Sibary Wheatcroft passed with very great credit, and Messrs. Richard E. L. Penhale, John Henry Penhale, John Penberthy, Charles E. Cockram, Thomas Pottinger, William Freeman Barrett, Henry Charles Harrison, and Charles Curson Clark, with great credit.

In the Report of the NEW MEMBERS OF THE PROFESSION from the New Veterinary College, Edinburgh, in April last, the name of Mr. Kay Lees, of Oldham, Manchester, was omitted. W. H. COATES, *Secretary.*

Jurisprudence.

IMPORTANT DECISION.

IS WIND-SUCKING A VICE OR AN UNSOUNDNESS?

Exchequer Division, June 24th, 25th, and 26th.

Sitting at Nisi Prius, before BARON HUDDLESTON and a Special Jury.

MESSENT *v.* REA.

THE plaintiff, a gentleman residing in Hinde Street, Manchester Square, London, sought by this action to recover compensation from a horse-dealer carrying on business in Trinity Square, Southwark, in respect of the alleged unsoundness of a horse which he purchased from the defendant, with a warranty, for eighty guineas.

The plaintiff alleged that after he had received the horse he found that it shied ; that it had lop ears, which were supported by an artificial arrangement of elastic bands ; that its teeth were "bishopped" ; that it made "grimaces" and was a "wind-sucker" ; and that in consequence it suffered from incipient blindness. The defendant denied that he had warranted the horse or that it suffered from the alleged unsoundness.

Mr. Philbrick, Q.C., and Mr. Anderson appeared for the plaintiff, and Mr. Charles Russell, Q.C., and Mr. Fullerton represented the defendant.

The following summary of the trial contains the salient points of the evidence adduced on both sides.

The plaintiff, Mr. Messent, stated in his examination by the learned counsel, Mr. Philbrick, that sometime last year, about June, he had complained to defendant of horses previously purchased, and that about the end of that month the defendant called on him and stated he had purchased a very nice bay horse, which he could recommend, and that it would make amends for the other purchases. He could warrant this one indeed it was the best horse he had ever had ; and that he would take the low price of eighty guineas for it. The defendant left the horse, although the plaintiff demurred, as his stable was full ; but he yielded to the entreaty of the defendant, and the horse was placed in a neighbour's stable. The defendant called on a subsequent occasion to inquire how the horse suited ; the plaintiff said he believed very well, but he had been away from home, and therefore could not speak for himself, but his groom had not complained. The defendant, when speaking on soundness, handed the plaintiff the following certificate, bearing date February 4th, 1878.

"This is to certify I have this day examined a bay gelding, six years off, by the order of Mr. Rea, and I do not detect any unsoundness.

"(Signed) SAMUEL BIGNOLD, M.R.C.V.S.L."

The plaintiff observed that the certificate referred to February 4th ; and moreover, if he had a horse examined he always made it a rule to be present and see it done himself. In reply, the defendant said the animal was all right and everything he had represented. A few days afterwards the plaintiff heard the defendant had called again ; so on July 4th he sent a letter, enclosing cheque, in which he wrote: "I purchase this horse on the distinct understanding that you warrant him quiet to ride and drive, and sound ; but with reference to the latter, if you prefer it, subject to my Veterinary Surgeon's examination." To this letter no reply came, but in due course the cheque was returned through the bankers, and was endorsed by defendant. The plaintiff stated he went away for some time again; but early in August—about the 12th—he was driving this horse for the first time to Whetstone, about eight miles from London, and when near the town the horse shied, reared, and appeared greatly excited. He jumped out of the phæton, discovered the horse was bleeding at the nose and very uneasy. He left it at Whetstone for the night, and drove it back next morning. The journey was very gently performed ; he did not hurry it, and his grooms had duly exercised the horse daily with the others.

When he arrived home he mentioned what had happened to the groom, who said it might arise from a "wen" he had discovered in the neck. He mentioned the matter on one occasion to Mr. Rea, and also that he found the horse had a peculiar way of gaping and tossing its head. The defendant replied that all this was "freshness," and that one of his bits would put matters right.

On the 31st of August the plaintiff consulted Mr. Ward about one of the grey horses he had previously bought of the defendant for one hundred guineas, with reference to its soundness. Mr. Ward had the animal taken to Mr. Allen's riding-school, and whilst examining its wind discovered it was a "whistler." The plaintiff had sold this horse to a relative, subject to Mr. Ward's opinion, but the purchase was not completed in consequence; this horse was also warranted. He requested Mr. Ward to call next morning and give his opinion on the bay horse. Mr. Ward came, and as soon as he entered the stable he said the horse was a confirmed "wind-sucker"; was

nearer nine years old than six; and that if the Veterinary Surgeon had stated this animal to be six, the teeth must have been "bishopped," and they appeared to have been tampered with. The ears he found had been brought together by elastic bands, they being now lopped. Mr. Ward left the following certificate:—

"This is to certify I have this day, by order of Mr. Messent, carefully examined a bay gelding, aged, and I pronounce him to be unsound from laryngeal disease, wind-sucking, and defective vision.

"(Signed) ROBERT WARD, F.R.C.V.S."

The plaintiff was told by him that he had better send the horse away, for it was very likely to be taken seriously ill from the "wind-sucking," particularly if idle in the stable.

Plaintiff wrote to defendant stating the results of both examinations, asking if the defendant considered it was the right treatment to a customer who had been so lenient, to sell a horse with his ears tied up, with his teeth "bishopped," and a confirmed "wind-sucker"; but without prejudice offering to defendant the ultimatum of sending an experienced Veterinary Surgeon to meet the plaintiff and arrange the matter, or he would place the business in the hands of his solicitors. No reply was received, but one day the horse was taken seriously ill during plaintiff's absence. Mr. Dollar, jun., the usual veterinary attendant on the stud, was called, and said the horse would die. A telegram was sent to defendant to that effect, but no notice was taken of it. Mr. Ward was called in to consult with Mr. Dollar, and eventually the horse did recover; and on October 11th was sold by auction for twenty guineas at Park Lane Repository, the plaintiff's loss amounting to £69 9s. 6d. The plaintiff was subjected to a severe cross-examination by the defendant's learned counsel, but his evidence was not shaken.

The grooms bore evidence that the horse made "faces" or "grimaces" when it first came; but they did not know what it was, as they had never seen one like it before. The head groom admitted the defendant had given him a sovereign, and had promised him £5 if all went well with the horse. He forgot to tell his master about his discovery that the ears had been fixed by the elastic arrangements.

Mr. Robert Ward stated he was a Fellow of the Royal College of Veterinary Surgeons, of twenty-five years' experience, in practice now in the Harrow Road as a Consulting Veterinary Surgeon.

He said: On the 1st of September he went at plaintiff's request to his stables and examined the horse in question. Immediately he entered the stable he saw the horse "wind-sucking," and asked the grooms if they had noticed it; they said they had, but did not understand it. Examining the head, he found peculiar marks at the root of the ears, and the head groom said they were tied up with the elastic. The eyes were defective, the pupil dilated; this was the effect of nervous exhaustion, consequent on indigestion and digestive derangement from the wind-sucking. The larynx was enlarged, harder than normal, and distorted from the wind-sucking. The diseased condition must have been of some standing—certainly not of a week, but at least a year. In reply to his lordship, he said he considered wind-sucking a symptom of disease, and not a vice, as was erroneously supposed. His theory was that previous to the habit there existed a depraved condition of the digestive functions; the animal experienced a continuous feeling of hunger or desire to swallow something; the sympathetic and pneumogastric nerves became implicated to such an extent that the act, which should be voluntary, became involuntary. The habit was quite incurable; had never heard of an instance of cure; the disease increased; a horse, however slightly affected, would gradually get worse. It was, in his opinion, decided unsoundness. He quite

agreed with Professor Williams in his "Text-book of Veterinary Surgery," page 503, on Crib-biters and Wind-suckers. He was submitted to a rigid cross-examination by Mr. Charles Russell, Q.C., but the learned counsel failed to shake his opinion ; he was very severe on the subject of Bishopping.

Mr. Ward produced a specimen of dentition from a subject seven years off this year, which should correspond with the horse's lower jaws if it was six off last year, as stated, and he handed the specimen to the jury for them to compare with the mouth of the horse which was outside the court for their inspection, and he was willing for Mr. Fleming to decide the matter as to age.

Mr. Ward said the animal was undoubtingly suffering from the effects of wind-sucking on the 23rd of September. The animal was in a tympanitic condition and in great pain ; the Tympanitis was due to the wind-sucking ; the pain was much increased by the chronic inflammatory condition of the digestive canal, especially the colon. He suggested hot rugs and medicated enemas. Mr. Dollar had treated the patient in the usual manner, and was quite right in applying the embrocation to the sides if the hair was removed.

Mr. Thomas Dollar, jun., said he was a member of the Royal College of Veterinary Surgeons, in practice with his father in Bond Street. He and his father attended plaintiff's horses. He was called to the horse on the 22nd September, and found the animal much distended and in great pain ; he was suffering from Tympanitis and Colic impaction, caused by the wind-sucking ; he was very ill—thought he would not recover. Mr. Ward met him in consultation ; the horse did recover. Would consider a wind-sucker like this one unsound. The horse would be liable to indigestion and Colic. He knew Professor Williams' work, and agreed with him in his remarks on the habit, in page 503.

Mr. George Fleming said he was a Fellow of the Royal College of Veterinary Surgeons, a member of Council and the Board of Examiners ; was now Veterinary Officer to the 2nd Life Guards. Had twenty-five years' experience. Had listened attentively to the evidence given by Mr. Ward, and quite coincided with it. "Wind-sucking" was most undoubtedly unsoundness ; it would increase, and tend to shorten life—certainly to impair the animal's usefulness ; and would produce alterations in the digestive organs, the walls of which would become thinner ; the digestive functions would also become impaired. There was no cure ; the habit would continue to increase ; rupture of the stomach frequently occurred. In reply to his lordship, he said he should not pass such a horse for the Army under any circumstances ; indeed, he would not have a horse in his regiment that was a wind-sucker, as other horses acquired the habit, and it would therefore be dangerous to other horses to allow them to stand with one so affected. Indigestion would arise from it, the vision would be affected during acute Tympanitis ; the œsophagus would become dilated in time, and the larynx altered. He quite agreed with the opinion of Professor Williams in his work, page 503, paragraphs on Crib-biting and Wind-sucking.

His lordship then wished Mr. Fleming to accompany the jury to view the horse and explain the result of his examination to them, on behalf of the plaintiff ; and Mr. Bignold was deputed by Mr. Russell to be present on behalf of the defendant. This ended plaintiff's case.

Mr. Russell, in defence, pleaded the serious consequences of the result of this trial to the defendant, whom he represented as a man of long experience as a dealer in horses, and who had been at one time employed as agent for the purchase of Government horses.

He said he would call two members of the college who would prove that the animal was sound when sold, was sound now, and he would produce the horse outside the court for the jury's inspection.

Mr. Rea, in examination by Mr. Russell, stated he had been in trade as a dealer many years. He did not warrant the horse; he knew it was a wind-sucker, but did not consider that an unsoundness—only a vice or bad habit; did not tell the plaintiff it was a wind-sucker. In reply to his lordship, and in his cross-examination he said he bought the horse at Tattersall's, on February 4th; Mr. Bignold advised him to buy it, as it was such a nice horse. Mr. Bignold had known it for some time. He gave thirty-eight guineas for it; in the yard Mr. Bignold gave him the certificate produced in court, he paid Mr. Bignold half-a-guinea for it; did not know at the time it was a wind-sucker; found it out soon after. He left the plaintiff to find it out, as he had done; he told plaintiff the horse was "workably sound." His lordship here remarked that a horse to be sound must be workable—did the defendant understand that? Defendant said he considered a wind-sucker workably sound. His lordship then read the definition of the term "unsoundness," according to the late learned judge, Baron Parkes. If at the time of sale the horse has any "disease" which either actually "does diminish" the natural usefulness of an animal, so as to make him less capable of work of any description, or which in its ordinary progress will diminish the natural usefulness of the animal, this is unsoundness; or if the horse has, either from disease or accident, undergone any alteration of structure that either actually *does* at the time or in its ordinary effects *will* diminish the natural usefulness of the horse, such horse is unsound.

Defendant admitted receiving the letter and cheque referred to by plaintiff, the endorsement on the cheque was his; he did not reply to the letter; took no notice of the remarks therein. His son fixed the elastic bands to the ears, he did not tell the plaintiff about them; he told the groom. The horse was seven years off now.

The son of defendant corroborated his father in most particulars; he knew the horse was a wind-sucker, but said nothing about it.

The ostler who was with defendant at the time was called. He said he soon discovered the horse was a wind-sucker—in about a fortnight; had driven the horse—he went well; considered him a sound horse.

Mr. Samuel Bignold said, he was a member of the Royal College of Veterinary Surgeons. Remembered examining the horse on February 4th, last year; the certificate produced of that date was his; he did not know the horse was a wind-sucker.

His lordship referred to the wording of the certificate: "I do not detect any unsoundness," and asked, Supposing a horse was blind of an eye—the off, for instance—and was placed against a wall, the right side to the wall, and if he was asked by any one—perhaps, myself, said his lordship—"Do you detect any unsoundness?" you would and could say, I do not detect any unsoundness.

Witness replied it was his custom to word his certificate always thus, or he should be always in a "law court."

His lordship replied that it was well for his clients to understand it.

In cross-examination by Mr. Philbrick, he said he had known the horse or three years; did not know it was a wind-sucker until that morning when Mr. Fleming and the jury examined it. He still considered it was sound, but should have stated that it was a wind-sucker on his certificate had he known it. The certificate of March last was his; he did not detect any unsoundness. The defendant requested him to examine the horse again as it was for sale. Did not say there was a trial pending; he knew nothing of this trial at the time, or would not have given the certificate. In reply to his lordship, he said he bought the horse for a client about three years ago of Mr. Smith of Pimlico—gave, he thought, ninety guineas for it. His client kept it some time. He then bought it himself, used it in his practice for about a month; he

gave £60 or £65 for it, but could not exactly say; he sold it to a client for 120 guineas; this client kept the horse some time—he thought about twelve months; he went to Australia, sent the horse into Tattersall's for sale, with a reserve of 100 guineas; did not sell the first time, it was then put up the second time without reserve, and sold for thirty-eight guineas. Defendant was the purchaser; never heard the horse was a wind-sucker whilst in his possession or since. Considered wind-sucking a vice, like crib-biting, not an unsoundness. Knew Professor Williams' work. Agreed that the description was right, but it was a bad or extreme case; had heard his lordship read Baron Parkes' definition of unsoundness; admitted wind-sucking did occasion indigestion and Colic; that wind-sucking was incurable. Did not in this case consider it an unsoundness. Had heard the evidence of Mr. Fleming and Mr. Ward; did not agree with them that the horse was unsound.

Mr. George Augustus Hall said he was a member of the Royal College of Veterinary Surgeons. He examined the horse in question for the present owner, Mr. Fredericks, in May last; he gave the certificate produced that the horse was sound. Saw the wind-sucking at once, directly he entered the stable. Did not consider it constituted unsoundness; the habit was not curable. Had heard the evidence of Mr. Fleming and Mr. Ward; did not agree with them that wind-sucking was an unsoundness; knew Professor Williams' work produced—it was a text-book; agreed with his remarks on Crib-biting and Wind-sucking, in paragraph referred to, on page 503, excepting that it was an unsoundness. Had heard his lordship's explanation of the term; wind-sucking, if bad, did occasion indigestion and Colic, and all disease must have a beginning. Had seen the horse that morning, and was still of opinion it was sound.

Mr. Gayton, horse-dealer, was the next witness called by defendant. He said he bought the horse at Park Lane repository, for twenty guineas; it was very poor-looking; he kept it till November, got it into good condition, sent it to Aldridge's and sold it for forty-nine guineas, to a Mr. Fredericks. He knew the horse was a wind-sucker; it worked well, was a nice horse; the present owner was pleased with it. In reply to his lordship as to whether he considered the horse sound, "As a practical man," he said, "I will speak the truth, my lord; the horse is perfectly sound, *bar* the wind-sucking." (Roars of laughter.)

Mr. Fredericks' groom was the last witness called by defendant. He said he drove the horse daily some thirty or thirty-five miles; it went well. Sometimes he drove it in the music-hall placard van, and other times in the carriage. His master was quite pleased with the horse; would not take eighty guineas for it now. When it came home, the grooms in the mews said, "You will have some trouble with this horse," for they saw and heard him wind-sucking; but the horse had never been ill or out of sorts.

The learned counsel, Mr. Philbrick, remarked that he must have had but little time to indulge in his habit of wind-sucking, if continually going thirty-five miles a day.

The court adjourned.

The following day Mr. Fullerton, in the absence of his learned colleague, addressed the jury for the defendant, calling their attention to the importance of the case to the latter, who had been charged with fraudulent practices in applying elastic apparatus to the animal's natural lop ears, the bishopping of teeth, as well as representing the animal as sound, knowing it to be unsound. He admitted that the animal was a wind-sucker—a patent defect or vice, and which the evidence of the professional witnesses went to show was not an unsoundness. The evidence in general was most forcibly laid before the jury, and he begged them to well weigh the position of defendant, a man in years.

Mr. Philbrick, on behalf of the plaintiff, said that with reference to the ears and teeth, or misrepresentation connected therewith, he would pass that over, and confine himself to facts. The questions he submitted to the jury were:—Did the defendant warrant the horse sound? and was the horse unsound? With reference to what was soundness and unsoundness, his lordship had already explained in his most explicit and learned manner—he could add thereto. With reference to the warranty, there was the letter before them, and the cheque endorsed; there was the admission of defendant that he said the horse was workably sound, and his lordship had explained that a sound horse must of necessity be workable—indeed, the question they had to decide was this, Was the horse a "wind-sucker?" This was admitted; then, was this an unsoundness or a vice. There was no doubt that the opinion of the professional gentlemen who had been heard was formed after due consideration, and it had to be borne in mind that the witnesses—Mr. Ward and Mr. Fleming—are not merely members, but fellows of the college—gentlemen holding the highest position, as scientific men, in their profession; and their evidence must be weighed against that on the other side.

His lordship, in addressing the jury, said the counsel for the plaintiff had forsaken the first part of the indictment—the charge of fraud—and very properly so; it was usual thus to bring these cases before the court. The matter for their consideration was simply this: Did the defendant warrant? and, if so, was there a breach of that warranty? He called their attention to the opinion on unsoundness he had read, on the authority of the late Baron Parkes. The question of warranty rested upon the letter and the cheque, also the evidence of defendant, that he did say the horse was workably sound, and he maintained it was so. That "wind-sucking" is an unsoundness, as well as a vice, you have the evidence of two professional gentlemen, who are, as the learned counsel stated, fellows of the college—the highest position in the profession; and they agree with the remarks of Professor Williams in his text-book. Against this, you have the evidence of the defendant's two professional witnesses, who maintain that a "wind-sucker" is not necessarily unsound, and who, although they agree with the general remarks in Williams' text, disagree with him on the point of unsoundness. You have the evidence of the horse-dealer, Mr. Gayton—whom I rather offended by alluding to the general custom of grooms to first remove the dealer's food before submitting the animals from their stables to work. He said, just as though it was unusual, "I will speak the truth; the horse was sound 'bar the "wind-sucking."'"

The evidence, his lordship continued, that the horse does work now, and does not appear to be the worse for "wind-sucking," is not the question; it is this: unsoundness, according to the meaning of the term.

On the question of damages, no damages are sought—only the amount of loss to the plaintiff between the original price of eighty guineas and that realized, with the expenses deducted—namely, £69 9s. 6d.

The jury consulted a few minutes, and returned a verdict for the plaintiff for the amount claimed.

His lordship certified for full costs.

Obituary.

THE following deaths have been reported by the registrar of the Royal College of Veterinary Surgeons. In the 44th year of his age, Mr. John Field, M.R.C.V.S., late Royal Artillery, who graduated in 1856; also Mr. Alfred Bland, M.R.C.V.S., Speenhamland, Berks, who received his diploma in 1863.

In the 34th year of his age, Mr. James Entwistle Mather, M.R.C.V.S., of Blackley, Manchester. His diploma bears date April 26th, 1869.

Army Veterinary Department.

Gazette, July 1.

VETERINARY DEPARTMENT.—The undermentioned veterinary surgeons on probation to be Veterinary Surgeons: Robert Moore, Francis Raymond.

Inspecting Veterinary Surgeon Tom Parinder Gudgin to have the local rank of Principal Veterinary Surgeon while serving during hostilities as the Senior Veterinary Surgeon at the Cape of Good Hope.

With regard to departmental and regimental appointments, the statements at page 61 of the Journal for July might mislead, and we therefore supplement them by some further remarks. We believe the general idea with regard to appointments is as follows:—All newly-appointed veterinary officers who are on the ten years' system will remain departmental during that period. This arrangement is for their own convenience, and to save them expense. On the expiration of the ten years, if retained for further service, they will be gazetted to corps if they wish it; but it should be understood that there is no hard-and-fast law. For example, a young veterinary surgeon just appointed may be gazetted at once to a corps after completing his period of probation; there is nothing to prevent this. On the other hand, a veterinary surgeon gazetted to a corps may be transferred to the department if he so wishes. By these means, both the regimental and departmental systems are retained, and veterinary surgeons have free scope. In this respect the veterinary system differs materially from the medical, and is a great improvement upon it. There are indications that, as time goes on, the departmental appointments will be more popular than the regimental ones. This is doubtless owing to the allowances being better, and there being no subscriptions to pay in the former; and also to a feeling of independence in the discharge of their duties which their position affords, for the less securely a good veterinary surgeon is tied to a commanding officer, the greater will be the consideration with which the latter will treat him, as he knows very well that if not contented, the veterinary officer can be readily transferred to another post.

An advantage of being gazetted to a cavalry regiment is, that the veterinary surgeon does not fall within the roster for foreign service. He may be detached for special duty for a time—as is the case with Mr. Steel, in Afghanistan, and others now in South Africa,—but may not be removed; so that those who are likely to seek cavalry appointments in future will be those who can afford the extra expense—for the cost of living in the cavalry is somewhat greater than in any other branch of the service—and who do not wish for foreign service. In making the selection for cavalry, those who have had the longest foreign service, and who possess also high professional qualifications, will have the preference. It is different with veterinary surgeons gazetted to the Royal Artillery, for so large a number are serving in India that they must all fall within the general roster. Duty with the Army Service Corps and depôts are also departmental appointments. Although the expense of living in cavalry is higher than in the other branches, yet veterinary surgeons under the new rates of pay can afford to live at mess and be otherwise very comfortable. With a salary of £250 a year, and no rent, rates, or taxes to pay, fuel, light, and servants found, and no forage to purchase, it is his own fault if a young veterinary surgeon cannot live tolerably well in the Army.

Notes and News.

CONTAGIOUS DISEASES IN THE METROPOLIS.—We find from the report of the Metropolitan Board of Works that the number of cattle affected with Pleuro-pneumonia within the metropolitan area in the years 1875, 1876, and 1877 was 638, 548, and 748 respectively; whilst in the year 1878 the number fell to 496. The most serious outbreak last year occurred in a herd of 115 animals, 55 of which were lost by disease, the outbreak lasting ten months. The value of the 496 animals slaughtered, as certified by the Board's inspectors, was £12,409 15s., and the amount received from carcasses, hides, etc., was £3,754 0s. 4d. The claims in respect of the 496 animals have been considered, and the sum of £2,170 15s. 10d. has been awarded in respect of the same. So far as the Board is aware no case of Foot-and-mouth Disease occurred in the cowsheds of the metropolis in 1878, and the inspector of the metropolitan market, Mr. S. J. Rayment, reported only three cases, which occurred early in the year; the diseased animals were carefully removed and slaughtered. At Eltham 35 sheep were affected with sheep-scab at the beginning of the year; none of them recovered although under treatment, and they were all slaughtered by the end of April. Three cases of the disease were discovered in the Metropolitan Cattle Market, the first in 34 sheep, the second in 22 sheep, and the third in 4 sheep. The animals were all seized and slaughtered at the market slaughter-house. Coming to Glanders and Farcy, we find that in 1876 and 1877 the numbers of Glandered animals reported were 431 and 276 respectively, and of animals affected with Farcy 242 and 210 respectively. In the year 1878 the numbers were 296 Glandered and 275 Farcied. These animals were all slaughtered and the carcasses destroyed at one of the licensed knackers, except 12 which were Farcied; and of these, 8 recovered and 4 remained diseased at the end of the year. Proceedings were taken by the Board in six cases against persons for using or sending Glandered horses through the streets, and in seven cases for not giving notice of the outbreak of disease. Convictions were obtained in nearly all cases, and fines imposed. Although the number of cases of Glanders and Farcy reported upon in 1878 was larger than in 1876 and 1877, it is so far satisfactory, as it is supposed to show that owners are becoming more convinced of the necessity of giving notice of the outbreak of disease and anxiety to free their stables of the source of the contagion. There is reason to believe that the number of cases returned do not nearly represent all the outbreaks of disease, although experienced persons express an opinion that the number of affected horses in use has been materially lessened. No outbreak of Cattle Plague or Typhoid Fever in swine was reported during the year.—*The Farmer.*

EFFECTS OF FUMES FROM SMELTING-HOUSES ON LIVE STOCK AND PLANTS.—In the *Archiv für wissenschaftliche und practische Thierhielkunde*, Professor Haubner, of the Dresden Veterinary School, publishes a lengthy series of papers on his observations, extending over more than twenty years, upon the effects of the emanations from the Muldener and Halsbrückener smelting works upon live stock and vegetation in the immediate neighbourhood. The ores here treated contain about 12 per cent. of sulphur, and 2.5 per cent. of arsenic in combination, and consequently give off arsenious and sulphurous fumes during the process of roasting. The latter, on escaping into the air, are oxidised into sulphuric acid hydrate, while the condensed arsenious acid, in conjunction with other earthy and metallic constituents, is distributed far and wide in the form of fine dust. The soil with which these emanations come in contact has a strong acid reaction, and is found on analysis to contain the constituents of the fumes; but no markedly injurious

effect upon plants grown in it can be demonstrated, though the vegetation suffers much by the direct action of the fumes, especially by those of the sulphuric acid. The plants become yellow, their leaves wither, shrivel up, and finally fall off; cereal crops are arrested in their growth. The arsenical dust appears to injure plants only in the same way as dust generally; while, on the other hand, it is most detrimental to live stock fed upon fodder that has been exposed to it. Such injurious effects are confined to oxen, because other kinds of live stock are either not kept at all in the district, or are fed on substances which are not exposed to the action of the fumes, such as grain, roots, etc. Rearing stock in the neighbourhood is absolutely impracticable, for they fall into a debilitated state which carries them off in three or four years, and there is no possibility of fattening them. The yearly rate of mortality among oxen ranges from 30 to 50 per cent. They are always in miserable condition, suffer much from diarrhœa and cough, and in the case of cows the secretion of milk is always deficient. The disease caused by inhalation of the sulphuric acid fumes is described by Haubner as the "Sour-sickness." Its most prominent symptoms are diarrhœa, chlorosis, acid reaction of fæces, urine, and milk, rheumatic pains in the joints, loss of flesh, inability to rise, fracture of bones, etc. Owing to improved methods of condensing the sulphuric acid, which have been recently adopted, the "Sour-sickness" is now little met with, but cattle still suffer much from cough and lung diseases, caused by the inhalation of arsenical dust adhering to their fodder. The presence of arsenic in the lungs has frequently been demonstrated. At least three-fourths of the affected cattle suffer from ulcer of the stomach, which frequently results in perforation and death.

Veterinary Department of the University of Pennsylvania.—The Philadelphia Society for the Prevention of Cruelty to Animals has issued an appeal to the citizens of Pennsylvania for the foundation of a Veterinary Department of the University of Pennsylvania. Mr. Coleman Sellers, in an address accompanying the circular, says that in Great Britain and Europe the skilful veterinary practitioner is respected for his skill, and is recognised as a man of science. The time has come when the United States will either have to import from abroad men skilled in veterinary science, or it must take immediate steps to put it into the power of its own citizens to acquire the information needed to improve the sanitary condition of their domestic animals. It is estimated that the cows and the land to support them represent a money value of 1,300,000,000 dols. These animals yield 350,000,000 pounds per annum of cheese; 1,500,000,000 pounds of butter, which, converted into money, stands at 350,000,000 dols. per annum, only one-fifth less than the corn crop of the land. We are said to export 13,000,000 dols. worth of butter each year, and 14,000,000 dols. worth of cheese, while the ocean freights on these exports cost 1,000,000 dols., and the railroad freights, 5,000,000 dols. per annum.

Illinois Industrial University.—Mr. F. W. Prentice, M.R.C.V.S., M.D., has been appointed Professor of Veterinary Science in this University.

Diseases of Elephants.—The most common ailment amongst elephants is *Yaarba'hd.* It is of two kinds: one called dropsical *Yaarba'hd*, in which the neck, chest, abdomen, and sometimes the legs, swell with accumulations of water beneath the skin; the other is wasting *Yaarba'hd*, in which the animal falls gradually away to mere skin and bone. Both kinds are exceedingly fatal if they become established. They are most common amongst newly-caught elephants—in fact, hardly any such escape the affection to some extent. I have never seen a wild elephant suffering from it. The disease is induced by the radical change of food and habits undergone by

newly-caught elephants. Freedom from unnecessary restraint, liberty to graze at will, protection from all debilitating causes, such as exposure to the sun or inclement weather, are the best preventives and restoratives. Medicine is of little avail ; and if the disease is once allowed to become serious, there is every probability of a fatal termination.—*Thirteen Years among the Wild Beasts of India.*

How Swine Plague is Spread.—A party of anglers, while at a weir at Kelston, between Keynsham and Bath, saw several carcases of pigs floating past in the river Avon, and a resident farmer, who kept pigs near the river, told them that they were the carcases of pigs which had died of Swine Plague and been thrown into the river. He had seen more than 60 of these carcases floating down during the last three weeks. The discovery has led to complaints being made as to the highly dangerous practice of throwing these carcases into the river at a time when, according to the report of the chief Inspector under the Contagious Diseases (Animals') Act, in the county of Somersetshire, there have been during the past three months no less than 35 outbreaks of Swine Plague in Somersetshire, and as many as 632 had been affected. Of these, 509 had been slaughtered by order of the local authority, and 123 had died of the disease. In reporting upon this state of things to the magistrate at the Somerset Quarter Sessions, the chief Inspector, Captain Foold, says the powers given to the local authorities by the Order in Council as to swine are not sufficient to enable them to deal effectually with that highly contagious disease. He suggests that application should be made to the Privy Council for the same powers as they now possess in dealing with Pleuro-pneumonia, with the exception that the limit of time within which no removal should be allowed for the infected place should be 30 instead of 56 days. These powers would enable the committee to declare premises infected, to order slaughter of swine which had been in contact with infected animals, and to dispose of the healthy carcases ; and to declare when the restrictions should be removed. He also recommended the committee to apply for powers to prohibit the sale of pigs in markets within the petty sessional division where cases of Swine Plague occurred—a course which he thought would tend materially to check the spread of the disease. The recommendations were adopted by the Court, the period of quarantine, however, being extended to 40 days, the Chairman, Major Paget, observing that at present the Act only permitted the slaughter of diseased animals, whereas it was important that the power should be extended to all animals. The disease at present seemed to be in full swing, and it was almost impossible at that moment to tell the extent of the infection in the county. It is evident that the chief Inspector, Major Paget, and the Court of Quarter Session, understand the measures necessary for the control of Swine Plague.

The Oldest Horse in New York.—A correspondent, signing himself the "Owner of 'Yankee Boy,'" writes to say he has the oldest and best horse in New York. The horse was thirty-five years old on the 10th June. —*Turf, Field, and Farm.*

Cavalry Efficiency.—The *Army and Navy Gazette* of July 5 has the following :—"It is a remarkable fact, and one, we believe, without parallel in the history of the Household or even Line Cavalry, that the 2nd Life Guards marched into Aldershot on Tuesday with its full complement of horses—275 —all efficient. This most noteworthy state of affairs is due to the new system of remounting adopted in the regiment, by which horses not younger than four years are purchased. There was neither a young nor yet a sick or lame horse in the regiment on the occasion of its move. All were in splendid condition."

Parliamentary Intelligence.

House of Commons.—June 19th.

FOOT-AND-MOUTH DISEASE.

In the House of Commons, in reply to Colonel Kingscote, Lord G. Hamilton said: An outbreak of Foot-and-mouth disease amongst American cattle at Derby was reported to the Privy Council, and an inquiry was immediately instituted. From this it appeared that a number of cattle were brought from Canada and landed at Liverpool from the steamship *Dominion*. When landed they were twice inspected and examined, and were found to be free from disease. Eleven of them were purchased and sent on to Derby, and having been there found by the Local Government inspector to be affected with Foot-and-mouth disease, they were slaughtered. It is clear that the disease must have been contracted between the time they were landed and June 10, because they were inspected in Canada before leaving, and had they then had the seeds of the disease they would have developed during the voyage. Certain cargoes of cattle were also sent from Liverpool to Nottingham, but on examination they were not found to be affected by disease.

Correspondence, etc.

THE DISEASE OF GLANDERS IN THE HUMAN SUBJECT.

To the Editor of the Veterinary Journal.

Sir,—The above malignant disease, and its modified variety, Farcy, has from the earliest periods of history engaged the attention of learned writers, and even now in modern times the same interest is given to the investigation of the origin or cause of this most loathsome and fatal malady; yet with all our research and investigation the disease continues in this, the nineteenth century, as *rife* and *virulent as ever*.

This certainly is a subject for our most serious thought. Public and professional interest are alike deeply at stake; the former anxiously look to the men of science for measures of prevention, and the latter are expected to advance such measures.

Disease of such a fatally contagious nature, bidding us defiance in our endeavours in the curative art, must receive serious attention with a view to total suppression. "Sanitary Science" must be deeply studied, and when she has yielded that information sought, the authorities should be informed thereof and adopt those measures in the most stringent manner, to arrest the direful ravages of an enemy—not only to animals, but the human subject—of such an insidiously Protean type.

If our profession has done its duty, investigated and reported the result to the public, it is then free from public censure or the charges of professional incompetency, neglect, or apathy.

The application of measures of prevention does not rest with the profession, but with those especially deputed to guard the public against these fearful scourges. Now, if any apparent misapplication of the means or improvement in them occurs to a member of our profession, I take it to be a duty on the part of that member, not only to the profession, but the public, to draw attention to the fact, thus showing the latter we anxiously watch their interests in arresting those contagious or infectious diseases in our patients so dangerous to the community at large. With this object alone I draw your readers' attention to a recent case of death from Glanders and Farcy which

I saw at St. Mary's Hospital, Paddington, on Monday, April 14th. That the disease was Glanders and Farcy there was not the slightest doubt; and of the source from whence the subject received the contagium there is direct evidence, for the young woman it appears "kissed" the infant on one occasion, not knowing of course the fatal malady under which the poor little creature was gradually sinking; and it is somewhat marvellous none others of the household had received the disease by contagion; it is, however, to be hoped they are all now safe. The following is from the *Daily Telegraph* of April 18th:—

"EXTRAORDINARY DEATH FROM GLANDERS.—Yesterday Dr. Hardwicke resumed an adjourned inquest at the Paddington Coroner's Court, concerning the death of Emily Susan Hulbert, aged 18, who died from Glanders, contracted from horses whilst living with her parents in rooms over stables at 16, Colville-mews, Lansdowne-road, Bayswater. The deceased was a domestic servant, and being out of place went to live with her parents. The rooms occupied were over the stables of Mr. Bacon, a cab proprietor. After being there a week, the deceased complained that there were very bad smells from the stables, and whilst the mother was carrying an infant, aged fifteen months, down stairs, one of the horses, which was being watered near by, blew an amount of secretion from its nostrils on to the child, which afterwards was taken ill, and when taken to the surgery of Dr. Robertson was found to be suffering from Farcy and Glanders. Upon one occasion the deceased took up the child and nursed it. A few days afterwards she complained of pains in her arms, and this was followed by swellings and eruptions. She attended the St. Mary Hospital, where, upon examination, it was found that she was suffering from Farcy and Glanders, upon which she was admitted as an in-patient; but she gradually got worse, and died from the disease on Wednesday week, as also did the infant sister, who had been attacked with the same disease. The jury, after some consideration, returned the following special verdict: That Emily Susan Hulbert died in the St. Mary Hospital from the mortal effects of Glanders, contracted at 16, Colville-mews, Bayswater, her sister having previously died from the same disease. The jury are further of opinion that the provisions of the Contagious Diseases (Animals Act) of 1878, with reference to the outbreak of Glanders and to the treatment and disposal of the carcases of horses suffering from such diseases have not been duly carried out. It further appears that the provisions of the Slaughter-house (Metropolis) Act of 1874 have been violated by the carrying on of a trade by an unlicensed knacker. The jury further desire that the facts given on evidence should be brought before the Privy Council, and such steps taken to avoid, if possible, the recurrence of such accidents as these in future."

It will be observed that the jury expressed an opinion that the provisions of the Contagious Diseases (Animals) Act had not been carried out; "that the animal or animals had been treated medicinally against the statute. The Veterinary Surgeon who was called in stated that he told the owner the nature of the disease, and that the animal should be destroyed.

Now it appears some other measures than those generally adopted in such cases should be advanced. Should it not be incumbent on the Veterinary Surgeon to report the nature of the disease to those in whose hands the carrying out of the orders are entrusted, instead of being left to the owner of the animal? Or, better still, if, instead of appointing private practitioners as veterinary officers, these were appointed by the Privy Council, "for that duty solely," as suggested by you, Mr. Editor, in your excellent work, "Manual of Veterinary Sanitary Science and Police" (Introduction, page xv). It is rather astonishing those at the head of the Department have not long

since seen the force of your arguments ; surely they must have carefully read your works on the subject. However this may be, let us reason for a moment—a Veterinary Surgeon is called to look at a sick animal ; he finds the case one of Glanders ; he tells his client so, and further, that the animal should be at once destroyed, the stable well disinfected, etc ; and that the police should be informed—but this latter advice is optional—takes his fee, and returns to his duties. Now, is it likely he would go to the next Veterinary Surgeon, his opponent, with whom—as I am grieved to say it is but too frequently the case with us—he is on the most *unfriendly* and unprofessional terms, to inform him, or even allow his client to do so, and risk losing his client on a future occasion ? Although it may be that in some cases practitioners are on friendly terms, yet there is that feeling of jealousy between the one who has the appointment and those who are practising in the immediate vicinity.

Moreover, the duty of the Veterinary Sanitary Inspector is a far too important one, one would think, that for economy's sake a small portion of a busy practitioner's time should be hired. Is it not the duty of such an officer—if one existed—to thoroughly investigate all such cases as this one under notice, discover its origin, search out how many animals have been removed from the stables, trace them, then report thereon—how much easier for such an officers to do this, and how quickly will he be assisted by the private practitioner? Reverting to the question of economy. A certain number of these veterinary officers would be obtained to efficiently perform the duties now divided among an unlimited number of private practitioners, and at the same expense as that now incurred.

That for months, if not years, horses have been indiscriminately slaughtered in the locality, "an *unlicensed* place," seems astounding, and is another very plain argument for reform in this most important department of sanitary science.

How many cases there are in London of a similar nature no one would venture a guess, or how many score cases of Glanders and Farcy have never been reported during the last or present year those in office in this department can form no adequate idea. Should this be so ? Certainly not. However, the attention of those in power will now be drawn to this important and sad case of death from Glanders, the animal communicating the contagion not being reported, and the jury's wise desire that the Privy Council should take steps to avert a recurrence of such a melancholy death.

"Out of evil cometh good." May such here obtain, and a sound system of sanitary science and police emanate, is the earnest wish of

Yours obediently,

ROBERT WARD, F.R.C.V.S.

[We have been informed from several sources that Glanders is still rife at Notting Hill, several new cases having been "reported." We trust that measures may soon be adopted whereby the "reporting" will not be so much a matter of chance.

For the public safety some better system of inspection should be devised. Our suggestions are already before the public and the authorities, in our "Manual of Veterinary Sanitary Science and Police." We cannot add thereto, but hope some better scheme than at present exists may be adopted, and if our manual can assist in any way, we shall be thankful.

It does, however, appear strange that we have a police without a duly appointed veterinary staff, and that we should have a Board of Works with sanitary powers lacking also qualified veterinary officers. Can this be an oversight ? If so, the remedy is easy. But if intentional, why ?

Surely the appointment of such useful officers would not make matters worse, and we think a trial may be made with advantage. Something must be done, or when will Glanders cease to scourge us?]

CASTRATION BY THE ECRASEUR.

To the Editor of the VETERINARY JOURNAL.

SIR,—Perhaps some of your numerous readers will kindly volunteer some information relative to castration by the écraseur method. A description of the *modus operandi in full*, danger of hæmorrhage, and general advantages over the less modern system would, I am sure, be very much welcomed by the majority of your subscribers. Yours, etc.,

X. Y. Z.

CASTRATION OF CRYPTORCHID HORSES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Having heard from many professional friends, during the past four months, of the satisfactory operations performed by Farmer Miles upon ridgling horses, I was induced when in London last month to call upon him. I found myself in the company of a gentleman of most unassuming manners and of great intelligence, possessed of most honourable feelings towards our profession, which he is most anxious to assist so far as he may be able.

I have witnessed his operation upon twenty-eight horses—rigs and stallions—and do not hesitate to say that it is original, humane, safe, and expeditious.

It is not my intention to puff Mr. Miles, but I consider it a duty I owe the profession to point out the mistake the members of the Royal College will make if they allow this man to leave the country without having witnessed his system of castrating, or studied his method of securing the animal, which is unequalled either for the operation of castration, or for most of the ordinary operations required to be performed on the horse.

Yours faithfully,

BEN. H. RUSSELL, Captain, F.R.C.V.S.

Grantham, *July 8th.*

VETERINARY SURGEONS IN INDIA.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—With reference to your statement in last month's Journal, "that the pay of Inspecting Veterinary Surgeons in India was to be increased by £250 a year, and the other ranks in proportion," I wish to remark that if the said £250 be divided in the same ratio as the £2,664 granted under the warrant of 1878, a veterinary surgeon under five years' service will get nothing. One over five, and under ten years' service, would get one-fourteenth, or about £16 a year! Well, I suppose the heads of departments know best what the rank and file are worth, and if I have a chance of getting £16 a year more in India, I shall take it and be thankful. I confess, however, that I am somewhat sceptical about it, and would gladly commute my claim for a small sum down; for in my humble opinion the proverbially difficult task of extracting "butter from a dog's throat" is mere child's-play compared with that of extracting a fair share of public money from the persons who have the power of distributing the same.

Yours truly,

"POOR BUT HONEST."

PRESENTATION AT COURT.

To the Editor of the VETERINARY JOURNAL.

SIR,—Those of your readers whose feelings may have undergone a shock on being informed that the veterinary surgeons in Her Majesty's Army are ineligible for presentation at Court, will, I feel sure, regret to be further informed that the fate of the individuals so excluded is far more terrible than appears at first sight; for it would seem their disability is to follow them into the next world. If any faith can be placed in the words of Shakespeare, the veterinary officers are undoubtedly in a bad way, and likely to find themselves somewhat worse off in the future state than the present; being bereft of all those collateral advantages and sources of comfort which, although coming under the heading of worldly "vanities," tend nevertheless to ameliorate their condition so long as life lasts.

Let Touchstone explain.

"*Touchstone.*—Wast ever in court, shepherd?

"*Corin.*—No, truly.

"*Touchstone.*—Then thou art damned.

"*Corin.*—Nay, I hope.

"*Touchstone.*—Truly thou art damned; like an ill-roasted egg, all on one side.

"*Corin.*—For not being at court? Your reason.

"*Touchstone.*—Why, if thou never wast at court, thou never sawest good manners; if thou never sawest good manners, then thy manners must be wicked; and wickedness is sin, and sin is damnation. Thou art in a parlous state, shepherd."

Those who care to follow the dialogue will, I think, have little doubt that in the character of *Corin* we have an embryonic veterinarian, as well as a shepherd.

I am, Sir, your obedient servant,

Woolwich, *July 7th*, 1879. "VETULA AVIS."

GLANDERS IN INDIA.

To the Editor of the VETERINARY JOURNAL.

SIR,—My attention has been called to an article in your Journal for May last, under the heading of "Editorial," on Glanders and Farcy, in which it is stated that the contagion "has manifested itself in the valuable Saharunpore Stud." As I hold veterinary charge of the Government Remount Depôt at that station, I beg to state that there is no foundation for such a report, as there have been no cases of Glanders or Farcy, or any other form of malignant or infectious diseases amongst the Government horses at that depôt. There was an outbreak of malignant disease, and both Glanders and Farcy, amongst the *dâkh* and station horses last autumn at Saharunpore, which I reported to the civil authorities at the time, and I shot several horses before the arrival of veterinary surgeons Anderson and Poyser, who were sent on special duty in the district to report on the disease; but there were no cases in the Stud or Remount Depôt, as special precautions were taken by me to prevent the contagion reaching the Government horses, and I am happy to say with success up to the present time.

Trusting that you will insert this contradiction in your next issue,

I remain, Sir, yours truly, GEO. KETTLEWELL,

Staff Veterinary Surgeon, Bengal Army.

Landour, India, *June 16th*, 1879.

[The statement that Glanders had appeared in the Saharunpore Stud, appeared in several Indian newspapers sent to us. We are happy to learn that the report is unfounded, and that, owing to the measures adopted by Mr. Kettlewell, the establishment escaped contamination.]

COMMENTS.

There is a strange weakness in the human mind with regard to the pretensions of impudent charlatans, who profess to do anything and everything in the way of curing disease. This weakness is apparently inherent in every race of mankind —from the savage, who has his medicine man, to the civilized Briton, who has his Holloway, Morrison, and other cure-all medicine men. The following will show that in Madras, also, the cunning native is not above taking advantage of this oftentimes dangerous weakness.

MOST IMPORTANT NOTICE.

A Perfect Cure for Cholera.

THE undersigned begs to inform only the wealthy ladies and gentlemen of Madras he will guarantee to cure Cholera, and he will be very happy to grant insurance from Rs. 500 to Rs. 2,000, in curing case if required. For every visit, Rs. fifty, ready cash and prepaid. Please apply to M. A. APPAROW MOODELLIAR, Cholera Doctor and Royal Pegu Pony Merchant and Commission Agent, Mount Road.

IMPORTANT VETERINARY NOTICE.

For Sale.

Wonderful Horse Medicines.				Valuable Pony and Horse Medicines.			
For condition, a dozen balls	Rs.	6		Hard Breathing	Rs.	6	
Do. Fever do. ...	,,	6		Farcy	,,	6	
Do. Cold do. ...	,,	6		Gripes or Bellyache	,,	6	
Do. Coughs do. ...	,,	6		For Glanders or Quinsy ...	,,	6	

THE undersigned begs to inform ladies and gentlemen possessing valuable horses and ponies, that having for more than eighteen years had much experience in the above line of business, he has prepared the above new Pills, which will effect a positive and immediate cure without bleeding, blistering, cutting, or any other injury being done to the sick animal, and will save great inconvenience and expense, or loss of the animal to the owner. He will also guarantee and insure according to the value of the animal; and further, he will undertake also to cure the animal on written contract without receiving any sum beforehand. If not cured, no charge whatever will be made, and he will prove that none of the above diseases are *not* contagious. M. A. APPAROW MOODELLIAR, Royal Pegu Pony Merchant, Next to the Round Tannah, Mount Road.

P.S.—Gentlemen requiring his personal attendance will be pleased to intimate the same. Charge for each visit, Rs. 10.

At a recent meeting of the Limerick Guardians, Mr. Thomas M'Mahon Cregan remarked that one of the most celebrated veterinary surgeons in Limerick, *Mr. R. Dyer, had given it as his opinion recently that there was no such thing as contagious Pleuro-pneumonia in the country.* Subsequently the clerk (Mr. Wilson) reported that the guardians had been served with a process for £15 by a farmer named Murphy, who alleged that a cow of his, suffering from Pleuro-pneumonia, had died through the alleged negligence of the board's officer, thereby debarring him from getting the compensation now sought to be obtained. Mr. James G. Barry remarked that in the present case it was *curious to find that Mr. Dyer, who, as stated by Mr. Cregan, asserted that there was no Pleuro-pneumonia in the country, certifying that Murphy's cow had died from that disease* (laughter). The veterinary inspector had certified that the cow in question had not died from the disease. The guardians unanimously resolved on defending the action.

Mr. Dyer, we regret to observe, has on several occasions written to the Irish newspapers denying the existence of contagious Pleuro-pneumonia in Ireland—or indeed, anywhere else; and it is still more to be regretted that, in order to support his assertion, he has had recourse to serious misstatements. For instance,

in a letter from him, and which appeared in the *Irish Times* for June 14th, allusion is made to the experiments at the Brown Institution, and an entirely inaccurate description is given of them, as a reference to the report which is published in this Journal will prove. We are quite astonished that a member of the profession should not only deny the infectiousness of this disease, but resort to such a course to substantiate his mistaken notions. We print his letter below.

PLEURO-PNEUMONIA AND THE BROWN INSTITUTION OF LONDON—A STARTLING REPORT.

To the Editor of the IRISH TIMES.

SIR,—Experiments have been instituted at this establishment during the past three years—from 1876 to 1879—for the purpose of determining in what manner Pleuro-pneumonia can be produced. It appears from the report, which will be found in the May number of *The Veterinarian*, that one of the most eminent pathologists has laboured for the past three years in attempting to produce Pleuro-pneumonia in cattle, without success. It is stated in that report that a batch of seven cows was placed in a shed which had been inhabited by cows suffering from this disease, and that this batch was mixed with cows at the time affected with it. These seven cows remained for three, four, and six months exposed to infection. They were all slaughtered, and the lungs were perfectly healthy. Injection of virus from a Pleuro-pneumonic beast was tried; pieces of diseased lung were inserted under the skin; virus was given by way of drench; injections of virus were tried through the venous circulations—all failed.

Now, sir, what are we to learn from this? I take it that the more we know of the disease called Pleuro-pneumonia the less we comprehend of its contagious or infectious character. An eminent authority has asserted that infection or contagion is certainly produced by excreta of a diseased animal; by the clothes worn by a person being in contact with a Pleuro-pneumonic beast, and other strange things. This appears to be at last exploded; and, so far as I can understand the report of the proceedings recorded at the Brown Institution of London, that actual contact has failed to produce the disease known by the name of Pleuro-pneumonia. It seems to me somewhat singular that not one member of the profession has, so far as I have seen, made any comment upon this extraordinary report, although it appeared last month in print. It may not be generally known that there are two publications issued in London every month—one is *The Veterinarian*, a very old-established periodical; and a recent issue, THE VETERINARY JOURNAL—both edited by men of undoubted ability.

What are we to learn from the result of these experiments? It does not require that men should possess the greatest amount of intelligence to come to the conclusion that the affection which is causing the loss of a large quantity of flesh-food by slaughter and burial, as well as the loss of money to ratepayers, is at best a questionable as well as a doubtful one. It may be asked, What case is and what is not contagious? After carefully reading the report alluded to, I can come to no other conclusion than that which I have often boldly asserted.—Yours, etc.,

Limerick, *June* 10, 1879. R. H. DYER, M.R.C.V.S.

In the prospectus of the American Veterinary College, just issued, it is stated that "the Board of Trustees have determined that the proposed change in the requisites for graduation, requiring attendance upon 'three, instead of two full courses of lectures,' be for the present deferred. This decision was arrived at in response to the numerous expressions of regret received from students from all parts of the country, stating that owing to the stringency of the times, they would be unable to afford the additional expense of living in the city, which such regulations would entail upon them." The decision of the Board of Trustees is to be deplored, as all who have any experience in veterinary teaching and practice know full well that a few months' course of lectures are totally inadequate. In this country

it is found that even the three years' course of study is insufficient, and those who are best acquainted with the requirements of the profession are of opinion that four years' study would not be more than barely sufficient to prepare students for the duties of their calling. America has as much need of properly trained veterinarians as this country; but she will never obtain them if the students are to fix their own course. They certainly should not be allowed to be the judges and arbiters in the matter of veterinary education.

ANSWERS TO CORRESPONDENTS.

R. WEST.—We are not aware that Prof. Law's treatise on Castration is yet published. You shall be informed as soon as we hear.

"DUM SPERO SPIRO."—There is no work of the kind in our language. Bruckmuller's is the only treatise, and that is in German.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. J. Masters, Royal Artillery, Newcastle-on-Tyne; Professor Lyford, Roscoe, Connecticut; J. Rowe, London; R. Ward, London; "Veritas"; P. Beattie, Bogfern, Aberdeen; W. D. Sartin, Royal Artillery, Woolwich; A. E. Macgillivray, Banff; Captain Russell, Grantham; "Poor but Honest"; W. Day, Warminster; W. S. Careless, Lincoln; R. West, Redhill; J. C. Dwyer, Royal Horse Artillery, Woolwich; "Dum Spero Spiro"; "Vetula Avis"; G. Kettlewell, Landour, India.

BOOKS PAMPHLETS, ETC.: *A. Offenburg*, Geheilte Hundswuth beim Menschen; Annual Announcement of the American Veterinary College; *H. B. Sands*, Spasmodic Stricture of the Urethra; *A. Johne*, Ueber die Ursachen der Mauke oder Schlampemauke des Rindes; *F. Gutsch*, Anleitung zur Ausübung der Fleischbeschau; Catalogue and Circular of the Illinois Industrial University; *E. Dele*, De L'Inoculation Preventive de la Pleuropneumonie; *A. Liautard*, Vade Mecum of Equine Anatomy; *N. Cressy*, Natural History of Bezoar Stones, Calculi, etc.; *C. A. Cameron*, Report on an Epidemic of Fever caused by Infected Milk; *W. Craig*, Notes on a Rare Congenital Malformation of the Leg.

JOURNALS: *Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinarkunde; Wochenschrift für Thierheilkunde und Viehzucht; Recueil de Med. Vétérinaire; Archives Vétérinaire; Annales de Méd. Vétérinaire de Bruxelles; Lancet; Medical Press; Farmer; Mark Lane Express; Deutsche Zeitschrift für Theirmedicin und Vergleichende Pathologie; Journal of the National Agricultural Society of Victoria; L'Echo Vétérinaire; Moore's Rural Life; North British Agriculturist; American Veterinary Review; Revue Vétérinaire.*

NEWSPAPERS: *Irish Times; New York Herald; New England Farmer; Nottingham Evening Post; Champaign Times; Melbourne Argus; American Turf, Field, and Farm; Dundalk Herald; Norwich Argus.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1879.

REMARKS ON THE CASTRATION OF CRYPTORCHID HORSES, AND ON HÆMORRHAGE AFTER ORDINARY CASTRATION.

BY PRINCIPAL WALLEY, ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

I PERUSED with much interest the article by Mr. Lyford (in the August number of the VETERINARY JOURNAL) on the castration of cryptorchid horses. It is quite true, as Mr. Lyford asserts, that little notice has been taken of this operation by British veterinary surgeons ; and I assume that this want of interest on our part has arisen largely from the fact that the number of cryptorchids in Great Britain is comparatively small, and that as a rule these animals are isolated and worked with geldings In America—as I was informed a short time ago by Mr. Miles—cryptorchids are numerous, this being attributed by that gentleman to the fact that the abnormality is hereditary, and that at one time breeders employed cryptorchids largely for stock purposes.

I must candidly confess that I have not operated upon a cryptorchid, as occasion for doing so in my practice has never arisen ; but in thinking over the matter, I came to the conclusion in my own mind that the operation must be performed—in the case of intra-abdominal cryptorchids—either by passing the hand through the inguinal canal and internal ring, or by cutting directly into the abdomen ; and, the opportunity occurring, I, in

the presence of my colleagues, asked Farmer Miles which method he adopted. The rejoinder was characteristic, being, "Ah! that's the secret." Mr. Lyford's remarks confirm my ideas of the operation. Another thing occurred to me, viz., that in a large percentage of cases the testicle is lodged in the inguinal canal; in this surmise I was also correct. As to casting and securing, I do not see that Mr. Miles' plan, except in certain peculiarities in his ropes, differs from our own. I opine that all veterinary surgeons draw the colt on his hind-quarters first. In the case of old and big horses, most of us prefer the regular hobbles; and as to the stretcher, if it is not exactly the same thing, it subserves, I fancy, much the same purpose as the Scotch "back strap," which, if properly applied, keeps the animals in much the same position as they occupy in recubation, and draws their legs apart. It has seemed rather remarkable to me that none of those who have seen Farmer Miles operate have attempted to describe the operation; but I suppose they are all bound to secresy. Unfortunately, when Mr. Miles was in Edinburgh I could not put my hand on a cryptorchid, or I should have certainly been much pleased to have witnessed the operation; neither had he time—for which he expressed regret—to show me his casting apparatus or his instruments. Had I known that Mr. Lyford was so conversant with the subject, I should have, during his recent visit to this city, inquired further into it.

There are also a few things in Mr. MacGillivray's "Notes on Castration" which I think worthy of a passing remark. Hæmorrhage, in my experience, proceeds from one of several sources:—

Firstly, from the cutaneous artery being unusually large;

Secondly, from the presence of large vessels in the connective tissue between the dartos and scrotum, and the former and the *tunica vaginalis reflecta;*

Thirdly (when the posterior constituents of the cord are sectated), from unusual development of the artery of the cord;

Fourthly, from an aberrant, and consequently unsuspected artery;

Fifthly, from the divided end of the spermatic artery;

Sixthly, from laceration (or incision with the knife, as in Mr.

MacGillivray's case) of the spermatic artery above the point of section, by the operator dragging violently upon it during the struggles of the animal.

Now, in so far as the question of hæmorrhage is concerned, it is impossible to provide against all the sources of bleeding by one method; but I maintain, as I have always done, that for general purposes no method is superior to the actual cautery. The great mistake in its use is, that too much tissue is destroyed. I have lately adopted the plan, especially in old or large animals, of dividing the whole of the constituents of the cord with the hot iron, so as to catch any small aberrant arteries, and the artery of the cord; afterwards ligaturing the spermatic artery with carbolized cat-gut. This does away with the necessity of destroying so much tissue in the sealing of the artery with the hot iron, and gives *absolute* immunity from hæmorrhage. This practice, or one similar to it, has been carried out by Mr. A. Gray, sen., for a number of years; and although the application of the ligature occupies a little more time—a minute or two,—the inconvenience is counterbalanced by the ease of mind which the operator feels subsequently. I have operated with the *écraseur*, but have not had sufficient experience of the method to enable me to form an opinion as to its comparative merit. It is undoubtedly the most scientific method of operating, and was largely practised by the late Mr. Prentice, of Longford, Ireland, whose son will, I have no doubt, give the correspondent who seeks for advice all the information he may desire.

As to the arrest of hæmorrhage after the animal is on its feet, I see no objection to plugging the scrotum with fine tow (carbolized, if at hand), and securing it *in situ* by the aid of sutures. I have done it on two or three occasions successfully, even where the hæmorrhage was tolerably copious, while in one or two others I have re-cast the animals, and sought for the bleeding vessel and ligatured it.

The mistake usually made in plugging is, allowing the tow to remain for too long a period in the scrotum.

POISONING OF A HORSE BY TEA.

BY F. DUCK, M.R.C.V.S., ROYAL ARTILLERY, ZULULAND.

[THE following communication relative to a case of poisoning by tea is forwarded, under date June 14th, from the camp at Ischlungwena. The occurrence took place at the Matzanhlopi camp.]

On June 2nd, about 11 a.m., my attention was called to a charger belonging to Lord William Beresford, which had been turned out to graze with the troop horses in the early morning. The horse was presenting symptoms of a peculiar character, indicating acute congestion of the brain. He was lying on the ground, and kicking and struggling. When I attempted to take the pulse he got up, ran violently backwards, broke away, spun round quickly several times on his hind legs, then staggered and fell.

For a short period he remained quiet; then he suddenly arose, and at once ran backwards in a direct line for about thirty yards, and, as before, swung round rapidly several times, staggered, and fell.

These symptoms gradually became more aggravated, and the intervals of cessation shorter, while they were of such a character as to cause several bystanders to remark, "The horse is drunk!"

At one time the animal got up, shook his head, and with magnificent action trotted round in a complete circle; then he galloped round, stopped suddenly, ran back as before, and after again spinning round he fell and struggled automatically on the ground, occasionally turning his head and biting at the body behind the shoulder.

About 4 p.m. the horse had fallen into a "donga," and was violently dashing his head on the rocks. As recovery appeared to be quite hopeless, I killed him by passing an assegai through the heart.

The *autopsy* revealed intense congestion of the brain, the vessels on the exterior of both cerebral hemispheres standing out prominently, as if gorged with blood, while the cineritious substance of the organ was dark-coloured throughout. The stomach was full of grass and a little Kaffir corn, and when

opened it emitted an unmistakable aroma of tea; indeed, the entire contents of the stomach were impregnated with this odour. There were slight traces of inflammation throughout the alimentary canal.

The history of the case is as follows:—The staff cook had carelessly kept his reserve supply of tea for the campaign in an empty corn-sack, and after taking out a portion, he had negligently thrown the sack under a waggon. About 7 p.m. the previous evening, the Kaffir groom took this sack, put into it the evening feed for the horses on the staff picket line, and fed them as usual by pouring out of the mouth of the sack a quantity of corn in front of each horse. It was almost dark, and consequently he did not observe anything unusual. The horse which died stood the last on the line, and was therefore the last to be fed. It is accordingly to be presumed that he received the largest portion of the tea—that in the bottom of the sack. In less than an hour the loss of the tea was discovered, and I took a lamp and examined the remains of the feed on the ground, when I found tea mixed with oats. All the horses fed well. It was black tea, and there should have been about ten pounds weight of it. None of the other horses showed any symptoms of illness. No treatment was attempted, as the horse was too violent, and running about everywhere in the Veldt. The column was also moving camp to the other side of the river.

[The case forwarded to us by Mr. Duck is, we are certain, unparalleled in the annals of veterinary, or even human toxicology. We can find no mention of poisoning of mankind by tea, or by its alkaloid—*theine* or *caffeine;* and we are not aware that accidental poisoning has ever occurred in animals. Indeed, according to some evidence, this alkaloid is not toxic. For instance, we are informed that Mr. Cooley ("Dictionary of Practical Receipts," *Art.* "Caffeine") took twenty grains daily for more than a month, without noticing any very decided symptoms. Blyth, however ("Manual of Practical Chemistry," p. 85), states that theine is, in large doses, a poison. Frerichs, C. J. Lehmann, Husemann, and others, have made themselves the subject of experiment. Lehmann, after taking ·5 gramme, suffered from frequency of the pulse, irritation of the bladder,

cerebral excitement, slight hallucinations, and lastly, desire to sleep. Husemann took ·25 gramme, and had somewhat similar symptoms. Pratt, with subcutaneous injections of from ·12 to ·8 gramme, suffered from symptoms rather different from the foregoing; ·3 gramme lessened the pulse and caused sleeplessness; ·4 to ·5 gramme quickened the pulse, and caused a desire for frequent micturition, but no dilatation of the pupil; ·8 gramme caused great uneasiness and anxiety, trembling of the hands and arms, so that he was unable to write, and later a restless sleep, with continual dreaming. According to Strauch, the least fatal dose for cats is ·25 gramme, a quantity which killed a cat in thirty-five minutes. Demberts also showed that in large doses it is fatal to animals, inducing tetanic stiffness of the muscles, an increase in the frequency of the heart's action, and increased reflex action. Indeed, in all experiments on animals there has been increased frequency of the heart's contractions, and repeated emptying of the bladder and intestine.

From its peculiar physiological action, this alkaloid has been recommended as an antidote in opium poisoning. It is therefore probable that had it been possible to administer opium in the above case, it might have had a beneficial effect.]

THE PRINCIPAL FACTS HITHERTO ASCERTAINED CONCERNING *BACTERIA*.

BY J. H. STEEL, M.R.C.V.S., ROYAL VETERINARY COLLEGE.

(Continued from page 7.)

IN the foregoing record of the life-history of *B. termo*, we have described its germs as floating about in the atmosphere. Before we accept this position, we must examine the bases upon which the celebrated "*Germ Theory*" is founded and supported by its originator, PASTEUR. Those who, with him, hold that wherever organisms appear they owe their presence to germs or sporules—complete beings in a state of dormant vitality, the products of pre-existing organisms—are Panspermists. Opposed to them are the heterogenists, or believers in "*Spontaneous Generation*," who consider that under certain conditions matter may become so

aggregated as to constitute molecules influenced by vital instead of chemical or physical force. *Dr. Bastian* is the leading advocate of this view. He believes that he has been enabled to generate organisms spontaneously in an Infusion of Turnip with Cheese, but other observers have not been equally successful in repeating his experiments. Lionel Beale says: "Upon the whole the production of any living form, however simple, from non-living matter, must be regarded as highly improbable."* Bastian affirms: "I maintain that even the very existence of organisms in the fluids and tissues of diseased persons is referable, for the most part, to the fact that certain changes have previously taken place (by deviations from healthy nutrition) in the constitution and vitality of such fluids and tissues, and that Bacteria and allied organisms have appeared therein as pathological products, either by Heterogenesis, or by what I have termed Archebiosis, or "birth direct from a fluid."† His arguments in support of this opinion are—

1. Bacteria during life are found in connection with dying tissue elements, as well deep-seated as exposed, and in equal numbers.
2. Microscopic examination of these cells favours the idea that the Bacteria are engendered in the cells rather than from external contamination.
3. Bacteria are absent from healthy blood, but after death, sooner or later, according to conditions, this swarms with them.
4. Bacteria appear in serous fluids contained in blisters of persons with a temperature of 102° F.
5. A chemical irritant beneath the skin, without external contamination, gives rise to organisms in twenty-four hours.

A little consideration will show us how much support all these arguments lend to the theory of generally diffused germs. And we are not yet in a position to solve the question of spontaneous generation, for we are not yet able to assure ourselves by what means germs, if present in a solution, could be completely deprived of future power of manifestation of vitality. The means of obtaining chemically clean and uncontaminated appliances are—

1. Application of heat. It was supposed that at the boiling point neither active nor dormant life could exist—more recently it has been alleged that germs can resist three hours' boiling (Tyndall) and 300° (Dallinger). It is found also that exposure to a moderate temperature for some time suffices for the destruction of these organisms, thus "the degree of heat is compensatory to its duration." Another point to be noted is that alkaline fluids are most difficult to sterilize, since alkalies increase the heat-resisting power of Bacterids.

* *Veterinarian*, 1875, p. 674. † *Veterinarian*, 1875, p. 858.

2. Calcination of the tubes and vessels used.
3. Purification of the air which is to come in contact with the solution to be preserved after sterilization.
   (*a*) By filtering through cotton wool or porcelain.
   (*b*) By allowing entry of air only after its passage through small-bore and very bent tubes. (Here the germs subside during their progress through the tortuous passage.)
   (*c*) By allowing entry of air only after its passage through strongly heated tubes. (Often these last two methods are combined.)

Germ-free chambers have been constructed for purposes of experiment. Professor Lister's experimental chamber was explained by him before the Pathological Society at its meeting of the 18th December, 1877.* *Tyndall,* before the Royal Institution, showed that an air-tight chamber, covered inside with glycerine, in a few days deposits its germs, which adhere to the glycerine,† and that afterwards cultivating solutions in the chamber remain sterile. A suggestion, with description, for a "Germless Surgical Room" was made by Mr. W. Thompson, F.R.S.E., before the Manchester Literary and Philosophical Society.‡ We may thus express our views on "Spontaneous Generation." Theory, on the one hand, leads us to note that with the march of progress the possible occurrence of life spontaneously has been proved impossible in any but the lowest organisms; on the other hand it leads us to the conclusion that vitality *may* be found to be convertible from magnetism or chemism, and not remain *the* exception to the grand law of the correlation of forces. Life may be converted into heat, and why not heat into life? A potent argument of heterogenists, too, is the question of the origin of the first organism. The glorious theory of evolution, for its complete latitude, requires that the lowest forms of life shall have sprung and do still arise from the inorganic substances around. Francis Darwin has shown us many transitions to vitality as exhibited by inorganic matters. The mode of origin of life is shrouded in mystery; in no one case has it been clearly demonstrated; but future research may remove this cloud, as it has done many another which obscured our examination of truth.

The theory of putrefactive germs is supported by the fact that

* *Med. Examiner*, 3rd Jan., 1878. Vol. iii., p. 14.
† *Veterinary Journal*, 1876. Vol. ii., p. 365.
‡ *Med. Ex.*, 13th Dec., 1877.

other and larger Bacteria than *B. termo* (as we shall shortly see) have sporules, just visible under the highest microscope powers. Tyndall defines a germ, "anything which germinates without reference to its being visible or having anatomical structure of any kind." Richardson considers the "germ theory not quite meaningless, but of minor importance,"* since the germs may commence the decomposition of water and thus putrefaction occur. Dr. Burdon Sanderson tells us "that ultra-microscopic particles exist in all exposed aqueous liquids and in ordinary air there can be no question, but of their size, structural attributes, or mode of development we know nothing"; † he hardly seems to approve of their being called germs. He shows that the putrefactive agent in common water is suspended and not in solution, from the fact that equal quantities used to contaminate like cultivating solutions did not produce equal effects. *Pasteur* proves the same fact by subsidence; for if water is kept still for some time drops from the upper layer are incapable of germination in a cultivating solution, while drops from the lower stratum seem particularly rich in matter capable of producing Bacteria. *Tyndall's* experiments show that ultra-microscopic particles exist in the air and in water in a state of suspension, though these fluids are optically transparent, for a ray of electric light sent through a chamber containing such air or water shows "motes," much as we see small particles in a sunbeam, and it is found that the ray after emergence is polarized, an undoubted result of the influence of suspended solids. Tyndall's glycerine chamber can be satisfactorily understood in the nature of its action, now we are assured that solid particles exist in the air.‡ *Cohn*, rejecting previous methods of testing the air for germs, has found that the slow passage of air-bubbles through cultivating solutions occasionally gives rise to Bacteria, but believes the germs on account of their minuteness as a rule are carried in the bubbles completely through the liquid without becoming thoroughly wetted, and hence germinating. Here we have very satisfactory proof that the ultra-microscopic organisms are really

* *Med. Ex.*, 1878, p. 527.

† "Proceedings of Royal Society," Nov. 22nd, 1877; and *Nature*, 29th November, 1877.

‡ *Beiträge zur Biologie der Pflanzen.* 3 heft, 1875.

germs of Bacteria, for we observe their development. These germs must not be confounded with others much larger floating about with them in the atmosphere, and which may be seen on microscopic examination of glycerine solution of the matter which has been separated by an air-filter of cotton wool. Such develop into fungi, etc. Tyndall has further told us about germs, that they float about the air in clouds, and those in air differ from those in water, in that the latter are in a much more advanced stage of development. Pasteur has confirmed the view that they are more prevalent in some places than in others, for his infusions in many cases remained long unputrefied, though freely exposed to the fresh air of the Jura. *Lister's* views are special; he says, "I have seen nucleated Bacteria myself, but I confess I have never seen anything that has resisted such treatment as these germs are said to have resisted. It is highly improbable that Bacteria have germs; they are absolutely reproductive organs; and if there be any organism in existence which does not require germs, I should say it is a Bacterium."*

This line of argument, it will be seen, is the outcome of Professor Lister's views of the nature of Bacteria, which we shall note later on as being by no means generally accepted. Besides, he argues that there are probably active ferment organisms which are related in size to *Bacterium lactis* as it is to the large *Torula cerevisiæ*, and therefore are beyond the present limits of vision. Finally, the contaminating qualities of ordinary water have been attributed to Bacteria, which are not generally recognisable because of their scarcity. *Dowdeswell* has proved that some certainly exist in a fully developed condition in ordinary water. *Dr. B. Sanderson* finds that "the air is entirely free from living microzymes."† He says that "until there is distinct evidence of germs they had better be left out of consideration;" but this is in speaking of them *as a pathologist.* Until by extra refinement of our means of observation we can actually see the germs of putrefaction, we must consider the germ theory in the light of a valuable "working hypothesis," and so we are warranted in adopting measures as against ultra-microscopic forms of miniature Bacterids or extreme levity, which possess powers of resistance

* *Med. Ex.*, iii., p. 14. † *Med. Ex.*, p. 1040.

considerably greater than those of the adult stage, and which are capable of remaining in a dormant state until placed under fit conditions for germination. We are therefore now in a position to assert, with the majority of observers, that putrefaction is due to living organisms, and we understand that these, in a state of dormant vitality, are disseminated through the air ; and it has been long known that contact with the air causes suppuration and retards the healing of wounds. *Lister* argued that such results are not due to the air itself, but to that which is suspended in the air, and which finds, upon exposed wounds, conditions favourable for development. Others argue that it is the contact of dead particles in the air which produces the deleterious effects.* But few deny the beneficial effects of the *antiseptic system of surgery*, which mainly depends not so much on the use of agents noxious or destructive to Bacteria, as on placing the wounded surfaces under such circumstances as will render them unfit to nourish the organisms. Indeed, it is not at all clear how we may obtain freedom from these germs; they pervade the living systems of plants and animals. *Beale* even says he has seen them *inside* cells, and they are ready to prey upon the tissues directly life ceases; also they are capable of resisting very high and prolonged temperatures, and are of extreme minuteness. Indeed, the bacterium of putrefaction is capable of Protean strategy; thus Pasteur has shown us that "in contact with oxygen the bodies cease to move and disappear, being transformed into refractive corpuscles, which in a suitable soil will reproduce the motile vibrios." In infusions of animal and vegetable tissues may be observed granules, of which some exhibit the reactions of fatty, others of albuminoid matters ; others differ from these, and are by some considered the germs of Bacteria. Thus M. Lemaire washed a circumscribed portion of a hospital wall, and in the resulting fluid found these granules in great numbers ; they were immotile, and affected by the Brownian movement.† As they disappeared, Bacteria proportionately developed. *Béchamp*, who observed these granules in plants and animals, termed them *microzymes;* he believed that they assist in the

* For "Antiseptic Methods" see *Lancet*, 1873, vol. i., pp. 694 and 729.
† *Veterinarian*, 1869.

performance of certain functions, and that they have their diseases and propagate them to the bodies of which they form a part, and into which they penetrate. In the washings of one square metre of a hospital wall recently were found "micrococci in great abundance, some microbacteria, a few epithelial cellules, some pus globules, red globules," etc.* The question as to whether or no germs exist in the tissues of living beings has been much debated. It is generally now considered that they do, and this having been proved seems to account satisfactorily for the decomposition of liver and other tissues when embedded in parafin, and so cut off from a supply of germs from without, as well as for the fact that decomposition after death commences in the tissues which are deeply seated. But if this be the case, why do not they during the life of the animal develop into the adult forms of Bacteria? This is variously explained; some say that they constantly develop, but that the Bacteria pass into the blood, where a fierce "struggle for existence" with the corpuscles and other living constituents occurs, resulting in the defeat of the Bacteria. Others maintain that during life they simply remain dormant, and are constantly removed as granules in the secretions or are stored up in the tissues. *Dr. Sanderson* received healthy blood into a calcined tube directly from the jugular of an animal, and it remained without putrefaction, showing that it contained no germs, or that fluid blood is not a fit *nidus* for Bacterial development. This the doctor explains as perhaps due to their destruction by long exposure to the heat of the body; for Tyndall has shown that such a condition may destroy them, and believes that there is a period of latency between the germ condition and the adult state, during which Bacteria may be destroyed by a comparatively low temperature. Others consider that the ozonised oxygen contained in the blood proves prejudicial to them. A strong argument in favour of the presence of germs in the living body is that artificially-produced effusions into peritoneal or pleural cavities contain Bacteria, even when the injected fluid cannot contain germs. Also *Billroth* has found *Coccobacteria* in closed abscesses. In consequence of their small size, germs are capable of entering the body in many ways, but

* *Students' Journal*, vol. vi., p. 278.

especially through the absorbent and respiratory systems. *P. Bert** has shown that compressed oxygen is prejudicial to the adult *Bacterium termo*, but not to germs. *Messrs. Downes* and *Blunt* have found that light is inimical to Bacteria, and may retard or prevent their development. Light is not essential to the development of Bacteria.† *Gunning*, of Amsterdam, finds that by exclusion of oxygen Bacteria and their germs are destroyed ; so that putrefaction will not occur if only filtered air be subsequently allowed to gain access.‡

Difficulties necessarily attend the investigation of the chemical composition of such a minute organism as *Bacterium termo*, but it is stated that its more refractive portions resemble protoplasm in becoming coloured by iodine ; they, too, are the seat of active changes in the larger Bacteroid organisms and the parts most universally present ; the transparent investment is said to exhibit the reactions of cellulose.

Means of combating these Bacteria—antiseptic measures—consist in placing the substance which is to be preserved in a position to resist the tendency of sporules, to increase and multiply at its expense, or the actual destruction of the bodies. This latter condition has been stated to occur when chlorine comes in contact with them, by the removal of hydrogen from their molecules, when ozone meets them, by direct oxidation, and from carbolic acid, by direct "shrivelling up," and destruction of vitality by abstraction of water. Defensive measures consist in treatment with certain salines and coagulants, as $HgCl_2$, As_2O_3, tannic acid, etc. *Lister* principally relies upon boracic and carbolic acids, and zinc chloride. An important bearing in this connection is preservation of museum specimens, and every practical worker knows that different matters require different preservative agents.

We must now turn to the relations of *B. termo* to disease. *Feser* considers this is a true Pathophyte, giving rise to putrefactive Emphysema—we are not aware that his views have been received. It is principally related to *Septicæmia*, in the elucidation of the pathology of which disease much good work has been done. It seems, however, open to doubt whether the organism concerned

* *Veterinarian*, 1875. † *Nature*, 12th July, 1877.
‡ *Nature*, 5th Sept., 1878.

in the production of this disease is the true *B. termo;* and *Vulpian* "observes well-marked differences in the characters of Bacteria and Vibrios, demonstrable in different instances, and considers true pathological Septicæmia distinct from that produced by experiment,"* and prefers to consider it Bacteræmia. At present we are in the position to state that we know no differences, in appearance, between the Bacterium of putrefaction and the septic Bacterium; they occur in like places, and we cannot separate them. *Pasteur* has found that the Bacteria which occur in the blood in Septicæmia are destroyed when in the adult stage by oxygen, being, like certain other forms, "anærobic,"† but the germs float about in the air unaffected; he also found that they develop with facility *in vacuô*, or in an atmosphere of carbonic anhydride. These conclusions are hardly compatible with some arrived at with regard to *B. termo*; but the literature of my subject abounds in contradictions and misconceptions! *Dr. Burdon Sanderson* has treated this matter in his lectures on the "Infective Processes of Disease." He arrives at these conclusions—that the disease is due to particles which are not Bacteria, but are the products of Bacterial action, that only by some of the numerous successive crops of Bacteria is the poison generated, that some bright red Bacteria are particularly virulent. Recovery after inoculation with septic virus is possible, and the severity of the effects is proportioned to the amount introduced; hence it is concluded that the poison is not living matter capable of self-propagation.‡ Also fluid with virulent properties gave no result when mixed with a cultivating solution. Anders' experiments show that "Germicides," such as chlorine, carbolic, and salicylic acids, are not capable of destroying the virulency of septic liquids. *Pasteur* considers Sanderson's virulent and innocent "crops" distinct Bacteria, the former being different from the latter in being destroyed by the action of the air.§ He finds that the former introduced into the blood cause Septic Fever. *Hiller* proved the innocuousness of the Bacteria by washing them frequently with distilled water, and then injecting them into the blood-vessels of living animals, without deleterious effect. *Drs.*

* *Lancet*, 1873, p. 748.
† *Lancet*, 1878, vol. i., p. 802.
‡ *Medical Examiner*, 27th Dec., 1877.
§ *Révue Vétérinaire*, July, 1878.

Begmann and *Schmiedeberg* obtained well-defined acicular crystals—sulphate of sepsin, by diffusion of putrefying matters through parchment and various precipitations and purifications, deliquescent on exposure to air, and on exposure to heat, melting and carbonizing; $\frac{1}{100}$ gramme of this in solution injected into the veins of dogs, which were slaughtered nine hours afterwards, caused ecchymosis of the large intestines and stomach, and congestion of the small intestines.* Dr. Sanderson concludes that if there were no Bacteria there would be no Septicæmia; they manufacture the substance which has the virulent effects, and no other means of production of this virus is known. Bacteria cannot carry on the septic process in the healthy tissues of an animal.

Having thus dealt with the commonest Bacterium, we will now examine a typical Bacillus, one which is perhaps to us the most interesting of this class of organisms—*B. anthracis*, the pathophyte of Splenic Fever. It is one of the four which have been selected by Dr. Sanderson as "organisms found in the body of pathological importance."† If the blood of an animal affected with Splenic Apoplexy be examined, it will be found to contain motionless rod-shaped bodies, which are considerably larger than *B. termo*. Aqueous humour and a warm stage (32°) prove favourable for the cultivation of this Bacterium. Under such conditions motion has been detected, and hence the value of Davaine's "Bacteridia" or "motionless" forms is disproved. It is described as in twenty-four hours becoming 120 times its original length, and in forty-eight hours presenting minute dots at intervals along it. This is due to the development of spores; they are noteworthy as showing to us that when we have to deal with a large Bacterium we can trace this method of vegetable reproduction: we are thus induced to have more faith in the theory of germ or spore production by *B. termo* and its allies. These spores are highly refractive particles, and escape by rupture of the elongated Bacillus (the only other form in which spores are known to be developed is *B. Subtilis*, as noticed below). *Siedamgrotzsky*, of Dresden, finds the germs in the blood of an animal affected with Anthrax, adherent to the white corpuscles, and he believes "that

* *Veterinarian*, 1869.

† *Medical Examiner*, p. 29.

the filterwork of the spleen retains the white corpuscles in its meshes," whence that organ is the most frequent seat of marked lesions ; the Bacillus rods are seldom seen in the blood of the living animal.* *Koch* describes the Bacillus as after twenty-four hours forming a network of its filaments. *Ewart's* researches on this form are so valuable that I am tempted to give them in summary.† When kept on a warm stage, *Bacillus anthracis* becomes actively motile. Sometimes a number of rods cease moving, and previous to lengthening themselves out into filaments, arrange themselves into patches of zooglea. Division occurs slowly, the segments being long united together by a thin filament. Several generations may elapse before the motile phase again appears. The rate of development regulates changes, but these are at once checked by a temperature of 37° C.—40° C. The filaments are at first hyaline, but soon protoplasmic contents may be distinguished from the gelatinous-looking sheath. The protoplasm next divides into short pieces, which contract, leaving clear spaces between them, and often again subdivide. At each side of this transverse line of division minute, clear specks appear, the first indication of the spores ; they increase in size at the expense of the protoplasm. Shortly after this the filaments seem to be made up of numerous segments, each containing one spore, these lying at the adjacent ends of the segments. Then the filament either bursts and gives exit to the spores after swelling of its gelatinous envelope, or breaks up into shorter parts, or remains *in statû quo.* In either case it undergoes granular degeneration. It is broken up by the fifth day of cultivation, the spores generally escaping on the third. They are motionless, bright, refractive, oval bodies surrounded by a thin, gelatinous-looking envelope, $\frac{1}{2500}$ inch in long diameter (Cohn). They do not always develop into rods, but may divide into four by a process in which the envelope assists. This occurs most readily at 20° to 25° C., and when the cultivation has been continued for seven or eight days, in the same aqueous humour. The rods are developed from the spore, and not, as Koch says, from the gelatinous capsule. When starved, the new rods do not increase in

* *Veterinary Journal*, 1878. Vol. i., p. 96.
† *Veterinary Journal*, 1878. Vol. ii., p. 17.

length, but produce spores. Messrs. *Pasteur* and *Joubert* have also investigated the life-history of this form.* We have ascertained the following points of its life history, in addition to those given above. It requires free oxygen, and is destroyed by carbonic anhydride ; portions of tissue containing it undergo decomposition when exposed at ordinary temperatures ; † *B. termo* appears, and the majority of observers state that it preys upon the Bacillus. Pasteur has shown, however, that "it is an error to infer that putrefaction, as putrefaction, destroys Charbon virulence," for the Charbon organisms are destroyed by the CO_2 generated in putrefaction. After they are dead their filaments undergo decomposition, but the spores remain intact. The adult filaments are destroyed by desiccation, and by a temperature considerably below 100° F. ; the spores are destroyed by a temperature of 37° C., and neither old, dry, nor new spores could survive two minutes' boiling, and spores are rendered inactive by oxygen under high tension (Ewart). The spores and rods remained alive when sealed in capillary tubes, and kept at a temperature near the freezing point.‡ Finally, Pasteur's solution will not support this Bacteroid ; neutral or slightly alkaline urine, and serum from the blood or subcutaneous areolar tissue, are capital cultivating fluids. These organisms were discovered by Pollender in 1855, and Brauell (Sanderson), but French observers independently noted them, especially the veterinary Professor Delafond. Davaine, in 1863, named them Bacteridia. These organisms were at first considered blood crystals, and neglected, as of minor importance. Dr. Hartz, of Munich, clings to this ancient idea, but the discovery of their living nature gave rise to the question as to what influence, if any, they have in the disease of which they are the invariable accompaniment ; at first considered the effect, they are now thought to be the cause by the majority of observers, but not by all. *P. Bert* finds that oxygen at high pressure destroys the Bacilli, but not the virulence of the blood ; also, when a drop of

* *Bull. de l'Acad. de Méd.*, 17th July, 1877.

† *Recueil de Méd. Vét.*, 30th July, 1877.

‡ *Siedamgrotzky* states that in a cold room infected blood loses its potency in a week. Dilution with distilled water, or traces of carbolic acid, prevent development of the spores. But if the blood be in a thick layer or in solid tissue, it may remain virulent for four or five weeks. *P. Bert* finds that the spores are *not* rendered inactive by oxygen at high tension.

blood from an Anthrax case was treated, *guttatim*, with absolute alcohol, it still killed a guinea-pig in less than a day, and the blood of this animal was capable of communicating the disease; it seems, however, neither method suffices to kill the *spores*: though M. Davaine explains these results as due to Septicæmia of the guinea-pig.* *Siedamgrotzky* also finds, after inoculation, general fever and local swelling before the Bacteroids appear.† *Toussaint* believes there are two factors at work in producing the lesions of Anthrax, and *Cohn* states that blood devoid of Bacteria is capable of conveying the disease; that the serum of the coagulated blood, though it contains none of the Bacilli, is virulent; also that Bacteria can exist in the blood without rendering it virulent. *M. Pasteur* successfully combats the arguments of Cohn, showing that he has totally neglected the spores, and confounds *Bac. anthracis* with *B. termo*. It is well-known that inoculation with Anthrax blood will generate the disease, but this is by no means conclusive on the question of whether the disease is really due to Bacillus. The organisms must be separated from all the other blood constituents, and still exhibit virulence. *MM. Pasteur* and *Joubert* give us evidence on this point.‡ They resorted to frequent dilutions of Anthrax blood with distilled water, whereby after a time only the Bacilli of the original constituents remained, and they only by their power of self-multiplication. The resulting fluid was found to convey the disease. It contained no corpuscles, such as M. Chauveau would consider to be the agents of contagion, nor was it opalescent. Also it did not contain a soluble, catalytic, diastase-like substance, for when it was filtered that which passed over retained no virulence. An interesting proof that it is not a soluble ferment which exists in the blood, and conveys the disease, is the fact that the placenta acts as a filter, and a healthy fœtus may live within an Anthrax-stricken dam. The Bacilli were therefore considered the conveyors of contagion, and it is found that they are present in the majority of forms of Anthrax. The virulence of the blood after treatment with compressed oxygen and alcohol, must be

* *Recueil de Méd. Vét.*, 30th May, 1877; and *Comptes Rendus*, 21st May, 1877.
† *Deutsche Zeitschrift für Thiermedicin*, i., 4.
‡ *Lancet*, 1877, i., 209; and *Recueil de Méd. Vét.*, 30th May, 1877.

attributed to the power which the spores possess of resisting such influences, which would destroy the adult organism. *Pasteur* observes that Anthrax blood contains no other organisms than these specific Bacteria, which disappear from liquids in the presence of CO_2. With regard to the method in which communication of the disease may occur, the received opinions on this point are—

1. That it depends largely upon the nature of the diet, since it occurs especially in highly-fed animals.
2. That it may be obtained from food or water.

The first opinion may be by some thought to imply that under especially the influence of high feeding, the blood may become so modified as to be capable of generating the Bacillus organism. It seems to us that these facts tend to afford additional support to the germ theory. But we have some quite recent experiments bearing upon this question. *M. Pasteur* has investigated the "spontaneous" Anthrax. He finds that almost invariably the mouth is first affected, and by feeding animals upon fodder moistened with a Bacillus-bearing liquid, he observes that the disease does not invariably appear, but is most liable to do so when the mouth is injured, or when the food contains thistles or other such irritant matters.* *M. Toussaint*, by laborious investigations, shows that the Bacilli may be always traced from their place of entry through the lymph vessels and glands. In this way in cases of Anthrax deemed "spontaneous" he almost always finds the mouth first affected.† There are several theories upon the subject as to how death is brought about in cases of Anthrax. Some consider the Bacilli remove the oxygen from the blood, others that they cause mechanical or specific irritation ; the most satisfactory theory at present is that of *Toussaint*, of Toulouse, who considers they produce mechanical asphyxia by plugging the minute capillaries of the lungs.‡ He first of all showed that the presence of a large quantity of oxygen in the air will not keep a patient alive, and then that the lungs often seem completely anæmic through want of access of blood, which the microscope showed to be due to the plugging of the

* *Veterinarian*, May, 1879, and *Rec. de Méd. Vét.*, 28th Feb., 1879.
† *Lancet*, 1879, i., 380.
‡ *Recueil de Méd. Vét.*, 30th Jan., 1878, p., 72.

vessels by Bacilli. A remarkable fact has been noted with respect to the non-liability of birds to injury from inoculation with Anthrax matter. MM. Pasteur, Joubert, and Chamberland have attributed this to their high internal temperature, since it has been shown that a moderate temperature prolonged will destroy Bacteria.* They endeavoured to remove this condition by the prolonged application of cold to the surface of the body, and so succeeded in developing Anthrax. They also proved the converse, that Bacteria become absorbed and the disease ceases when warmth is applied, unless the case is very far advanced. *M. Cohn*, however, opposes these conclusions, and considers "there is no constant relation between the normal temperature of animals and their aptitude, or the reverse, for the development of Splenic Fever;"† since lowering the temperature of birds to 104° F. does not determine development of the disease, though it occurs in sheep, in which animal this is the normal temperature; also depression of temperature to 99° F. or 100° F. in Carnivora was insufficient for the development of the disease. This must be considered at present unsettled; but I may observe that M. Pasteur has based certain therapeutic suggestions upon his theoretical observations.

Recent research has demonstrated that there are forms of Anthrax in which *B. anthracis* is not found in the blood. For a long time such cases were considered as proofs that the presence of living organisms is not essential to Anthrax. But in *Comptes Rendus*, No. 2, 8th July, 1878, is an important communication by *M. Toussaint.* He found in the blood of a horse which died from Anthrax no traces of vibriones nor Bacteria; nevertheless it destroyed fifty-four animals, the total number inoculated with it, in ten to fourteen hours. On *post-mortem* examination the muscles were found to be pale, but the small vessels all gorged with dark blood. A microscope power of 500 to 800 diameters showed in the blood, in the proportion of about five to ten for every corpuscle, spherical, or slightly oval vibriones, with scarcely any refraction, and slow and feeble movements. Generally solitary, never in groups of more than three, $\frac{1}{10000}$ mm. in thickness, $\frac{1}{2000}$ to $\frac{1}{1000}$ mm. in length. These

* *Compt. Rend.*, No. 2, 8th July, 1878. † *Lancet*, 1878, i., p. 802.

often blocked up the capillaries, and were found everywhere in the tissues and the fluids. In two and a half hours one produced by fission twenty-two others, but these never assumed the filamentous form. It is aerobic, and capable of developing in company with *B. anthracis*, in serum of dog's blood, for instance. It gives rise to real globular sporanges!

It is important that we should be able to distinguish living ferment organisms from those matters such as it is presumed exist in salivary, pancreatic, and gastric juices, and other fluids. These latter are capable of entering into solution, and it has been considered that filtration through porcelain is sufficient to separate them from the organised forms, but it is not yet shown that the ultra-microscopic germs may not pass through such a filter; indeed, we do not yet know satisfactorily the difference between living and non-living ferments! *P. Bert* believes that while compressed oxygen destroys living ferments, it does not affect the non-living.* *Müntz* shows that living ferments are most active at 25°-40° C., and chloroform arrests their activity, but does not that of non-living ferments, which all are more active at much higher temperatures.†

The question of the *nature of contagium* is one upon which I can but touch here. Its discussion has been very similar to that upon the nature of putrefaction. The following theories upon the subject are held:

1. Contact of two organisms produces like modifications (reciprocal movement of matter).
2. Dead matter in a state of change is capable of transmitting its condition under fit determinants.
3. Material particles from living bodies are capable of grafting on to other bodies, and so giving them like properties.
4. Organized bodies directly convey disease from one animal to another (Chauveau).
5. Organic germs pass between animals and generate in them like conditions.

Thus *Chauveau* tells us cells are the bearers of contagium; the last theory leads us to infer that the diseases are due to such organisms as Bacterids, and the germs of these give rise to disease by entry into the system. *B. anthracis* seems to us to prove that at least in *one* disease such conditions may occur, and

* *Recueil de Méd. Vét.*, 30th May, 1877.
† *Veterinary Journal*, 1876, i., p. 214.

the life-history of certain of these Schizomycetous organisms exhibit some remarkable points of accord with the progress of contagium. We need dwell on this matter no longer here.

Bacillus subtilis is interesting as being very closely allied to *B. anthracis*. *Cohn* obtained it from the rennet of a calf; its activity is destroyed below 30° C. It is actively motile, long, fine, generally paired, sometimes in fours or eights. If the fluid in which these are found be kept for some time at 30°, there are to be observed fibres with a swollen extremity filled with oval, slightly refractive granules, either heterocysts or spores. *B. subtilis* occurs also in white mucilaginous masses annually in certain Anthrax districts, where its presence in quantity indicates that conditions have been favourable to the development of *B. anthracis*.*

B. ulua (Cohn) is remarkable for the thickness and rigidity of its filament. *Cohn* found it in stale infusion of boiled egg. *Böllinger* finds Bacteria about five micromm. in length, with a peculiar rotatory motion around their long axis, to be the cause of "Black Quarter" *(Emphysema infectuosum)*.†

Mr. Hutchinson tells us that though no one has yet seen Syphilis yeast, "some one will see it some day;" and the same may be said of the contagium of Rabies and some other maladies. To illustrate the general bearings of my subject in this relation, I now give some of those diseases with the genesis or course of which Bacteroid organisms have, or are supposed to have, relation:

In Diphtheria, micrococci have been seen in the blood (Sanderson).‡

In Cholera, *M. Lemaire* found Spirillium Volutans, Monads, Cercomona, and Crassicandra in the fæces.§

"I am unable to account for Cholera without attributing it to specific organisms" (Sanderson).

Drs. Lewis and Cunningham, however, consider the so-called "Cholera bodies," or "Zooglea Choleræ," as remarkably transformed blood corpuscles.‖

* *Veterinary Journal*, i., 1878, p. 424. † *Veterinary Journal*, 1877, p. 392.
‡ *Medical Examiner*, p. 27. § *Veterinarian*, 1869.
‖ *Lancet*, vol. i., 1873.

Böllinger describes a case of Pneumomycosis in the horse due to *Zooglea pulmonis equi.**

Wagner traces the same malignant pustular disease, when affecting the intestines (*Mycosis intestinales*) to parasites.†

Spirochæte febris recurrentis gives rise to recurrent fever in India (for which consult Dr. Burdon Sanderson's "Report of the Medical Officer of the Privy Council, &c., N.S." No. III., 1874, p. 41. Also for figure photographed by Dr. Koch's method, see Cohn's Beiträge, b. 2, h. 3, p. 399).

Dr. Klein believes he has discovered the specific organisms of Sheep Pox.‡

They have also been found in Rinderpest, Cow-Pox, Erysipelas, etc.

MM. Christal and *Kiéner* find Bacteria in the blood, pus, and glands, in Farcy and Glanders.§ They describe two varieties: Spheroid granulations of variable diameter—homogeneous, refractive, seemingly transparent or black—with a rapid gyratory and translatory movement, ·0012 mm. in diameter at most; or spindle-shaped bodies, refractive and homogeneous, varying in length from ·002 mm. to 1·010 mm. The movements did not continue longer than six hours. When motionless, they were united and formed irregular, granulated masses. These were relatively few in number in the blood, but very numerous and of large size in the vascular glands and in the ulcerations. It was thought by these observers that the Bacteria might be useful for diagnosis of Chronic Glanders.

Bert finds that compressed oxygen does not neutralize snake poison, nor vaccine nor glander matter.‖ Sometimes Bacteroid organisms are found in fluids and tissues without causing disease. Thus *Eberth*, of Zurich, finds oval and actively motile Bacteria often in strings of two or three, in ordinary sweat, and he says they may accumulate around the hairs, or even penetrate them.

We may now hastily review certain innocent Bacteroid, and what light they can throw upon our inquiry into the general nature of these low organisms.

Leptothrix is a form best known as *L. buccalis*, which occurs

* *Veterinarian*, 1871, p. 361.
† *Veterinarian*, 1875, p. 214.
‡ *Veterinary Journal*, 1875, p. 134.
§ *Journal des Véts. du Médi.*
‖ *Comptes Rendus*, vol. 88, p. 11-30.

in the human mouth, especially on awakening in the morning: it is constituted of long chain-like filaments, which are transparent and so delicate as to break up into their component cells on being touched. It has a slow, undulatory movement.

Vibriones resemble Bacteria, but have bent joints and a rotatory motion—*V. rugula* and *V. serpens*.

Micrococci are rounded cells, which may be solitary or united into chains, or united by gelatinous matter into masses of *Zooglea* —the *M. vaccinæ* (Cohn), *M. diphtheriticus* (Dertil), *M. septicus*, (Klebs), and *M. bombycis* (Béchamp).

Spirillum consists of a long single or double spiral thread. *S. volutans* is the most common form, and is by far the largest of the Bacteria; it is found in the decomposing tissues of the water-snail, and on it may be detected a cilium at each end, which render it capable of rapid vibratile movements.

Spirochæte is longer and more closely curled, with very active serpentiform movements, and undulations passing along its whole length. It occurs in marshes, but is not common.

(*To be continued.*)

THE EXTRACTION OF THE MOLAR TEETH OF THE HORSE.

BY A. H. SANTY, F.R.C.V.S., NORWICH.

I VENTURE to forward a few remarks upon the above subject, thinking they may be of some practical use, at least to the younger members of the profession. As many have told me they have not attempted to extract the molar teeth of the horse, especially those posteriorly situated, I had the pleasure of demonstrating the method and the instrument (a drawing of which I send; the instrument may now be had of Messrs. Arnold) before the members of the Norfolk and Eastern Counties Veterinary Medical Association at their last meeting, when some members, to whom I had previously lent the instrument, gave evidence as to its great utility and the necessity for the operation. Indeed, I think that in our examinations for soundness, none are complete without a thorough examination of the molars, as I have seen horses useless from disease of the teeth and alveolar pro-

cesses; and in such cases I always reject them as unsound. Horses are frequently brought to me in an emaciated condition, and becoming every day less able to do their ordinary work; in many cases I find on examination that there is generally between the fourth and fifth, or fifth and sixth molars, a deep hollow, and consequent receding of the gum from the tooth to a great extent. The hollow is mostly filled with decomposed and partly masticated food, and emits an extreme fœtor. This is frequently the case on each side of the lower jaw. I will give one instance, though it could be multiplied by tens. A grey carriage-horse, formerly the property of a surgeon in this city, was sold about two years since, to a lady not far from here. The animal was in splendid condition, and remained so until the beginning of this year, when he began to look thin, and continued to do so until he was quite unfit for work.

I was requested to examine him and ascertain the cause. I could detect no constitutional derangement, but found the fifth molar on each side of the lower jaw diseased. I extracted both teeth on the 20th of May, and in fourteen days the coachman called with him in the carriage; he was then very much improved, and when I last saw him he had regained his former condition, and was reported as feeding well, which he could not do before the molars were extracted.

The teeth are not often diseased on their crown, but at the side, except when we find them diseased in the upper jaw, which is of less frequent occurrence, and then it is generally the third or fourth molar. The molars are then generally affected with Caries of the body of the tooth, and this is an occasional cause of Nasal Gleet (see case recorded by me in the *Veterinarian* for November, 1875).

There must also be disease, either primarily or secondarily, of the alveolar processes. I am inclined to think that the former is the case, and that it is caused by some acid formed by the accumulation and consequent decomposition of food; but I am at a loss to account for it being nine times out of ten at the fifth tooth. Perhaps some of the readers of the VETERINARY JOURNAL will be able to point out the cause.

To demonstrate the way of performing certain operations is

often difficult, but to describe it is, in my opinion, much more so; though in this case my task is comparatively an easy one, as the whole business is very simple. The animal being cast, I use Professor Varnell's balling iron to extend the jaws, and have an assistant to hold the tongue, while another, with a long smooth iron, pushes the cheek out of the way, and make quite sure that I get my forceps on the right tooth, and that only; when this is done I give a slight rotatory motion, then place my lever on the anterior tooth, immediately under the rivet of the forceps, and raise the tooth, which must come. When I know the tooth is loosened, which I can tell by a peculiar sucking noise, I take a fresh hold of it a little lower down, and incline it slightly to the inside, at the same time raising it—then out it comes without any injury to the jaw. In no case have I found injury at the time or afterwards to the anterior tooth from the pressure of the lever.

I can extract the longest molars, and frequently the fifth one, without breaking a fang, and have seen Mr. Whitwell, my late partner, extract the sixth. I do nothing to the jaw subsequently, and merely order soft, nutritious food for the patient. I never saw anything but good results follow the operation. The instrument is an improvement on one invented by my predecessor, Mr. T. Wells, M.R.C.V.S., Norwich, and used by him successfully for a number of years.

LAMINITIS OCCURRING AT GRASS.

BY W. STANLEY CARLESS, M.R.C.V.S., LINCOLN.

ON July 3rd an interesting case of Laminitis came under my notice. The subject was a mare, eight years old, which had been running on the common here for some months, and was taken up on the night of July 2nd by a boy, who did not observe anything amiss with her. The following morning, on the owner going to the stable he found the animal in great pain, and at once sent for me. I discovered her to be suffering from Laminitis, and saw her again in the evening, when she was much worse. The attack proved to be a most severe one.

The owner informed me that she had not been allowed any

corn for two months, and that she had no distance to travel on the road from the common.

Though on such a poor pasture, the mare was very fat; she had never been unwell before this attack.

This is the first case I have seen of Laminitis occurring when an animal was on grass. We have many cases of Laminitis here, due to the usual causes.

A NEW DISEASE ACCOMPANYING CONTAGIOUS PLEURO-PNEUMONIA IN QUEENSLAND.

BY P. R. GORDON, CHIEF INSPECTOR OF STOCK, BRISBANE, QUEENSLAND.

I SEND herewith a short description, by Mr. Geary, a practical grazier, of a disease that accompanied an outbreak of Pleuro-pneumonia in one of the far inland districts of this colony recently. It caused severe losses amongst several mobs of fat cattle that were being travelled to market.

Perhaps some of the contributors to the VETERINARY JOURNAL may be able, even from this meagre description, to state what the disease was, or the probable cause. By doing so they will confer a favour on many of the Australian readers of the Journal.

"During the last severe attack of Pleuro-pneumonia in the Warrego district, it was accompanied by a phase of the disease I had never previously seen, although, as you know, I have had a vast experience in the disorder. I first saw this form of the disease in a travelling mob of cattle that were in low condition. The first symptoms were those usually observable in Pleuro-pneumonia. These were in every instance followed by a rapid swelling of the upper part of the flank and body, from the hips forward, generally on the near side. The animals appeared to suffer severely, and about the sixth day, when the swelling was at its worst, a black and most offensive diarrhœa set in. The animals at this stage made for water, and generally after drinking freely died almost immediately. The whole course of this (to me) new disease never exceeded a week; it was shorter in the case of young cattle.

"On opening one that died, I found the usual symptoms of 'Pleuro' in the lungs; the stomach on the swollen side was very much discoloured and adhering to the side, and the small intestines were black and generally inflamed throughout.

"I have known cattle to recover from an attack after the swelling stage, but never after it had reached the black scour' stage. Cattle even that recovered from the earlier stage were mere shadows ever after.

"The pasturage at the time was dry, but the herd was in prime condition, and the attack of 'Pleuro' passed through it in a light form generally, with the exception of those attacked as described. The disease caused considerable anxiety amongst stockowners on the Warrego at the time; but as the 'Pleuro' spent itself in the herds, the 'black scour' disappeared with it."

ON THE UTILIZATION OF HORSES WHICH HAVE UNDERGONE PLANTAR NEUROTOMY.

BY GEORGE FLEMING, F.R.C.V.S., 2ND LIFE GUARDS, WINDSOR.

THE benefits to be derived from the operation of plantar neurotomy appear to have been appreciated long before the malady, for the cure of the lameness of which it is most frequently practised, was known. The history of the operation and the disease itself may not be familiar to many or any of the younger members of the veterinary profession, and it may therefore not be uninteresting to them to know that my researches have shown (*vide* "Horse-Shoes and Horse-Shoeing," p. 500) that the unknown author of the "Grand Maréchal, Expert et Français," published at Toulouse in 1701, lays down directions for the performance of neurotomy in the plantar region, and recommends the operation for abolishing lameness due to disease of the foot.* The operation was re-discovered by Moorcroft at the commencement of this century, and Professor Sewell claimed the credit of

* "Vous coucherez le cheval, ensuite lui ouvrirez la partie où l'on barre la veine, et en tirerez le nerf avec la petite corne; apres quoi vous le graisserez avec du populleum, et il guerira."

again discovering it in 1816. The disease, wrongly designated Navicularthritis, and for which neurotomy is generally resorted to, was fairly well described, and the symptoms, as well as the pathological appearances, lucidly enumerated by Osmer in his "Treatise on the Diseases and Lamenesses of Horses," published about the middle of the last century. The "Navicular Disease" is supposed to have been first described by the late Mr. Turner, of London, some forty years ago.

When neurotomy has been properly performed, and there has been no mistake as to the seat of disease, or as to the suitability of the case for operation, then the lameness symptomatic of the malady disappears through the consequent partial or total loss of sensation in the foot. Partial loss of sensibility is obtained by division of a branch of the plantar sensory nerves on the inner and outer aspect of the phalangeal region; while total deprivation is ensured by section of the main trunks of the same nerves in the metacarpal region. In consequence of the uncertainty of a successful result, I have for many years discontinued the "low operation," and now practise division of the nerves only above the fetlock. Of the humanity and utility of neurotomy there can be no question whatever, and provided the cases are well-selected and the operation is efficiently performed, the advantages to be derived from it are most striking, as well as enduring. But the disadvantages attending the loss of sensation in the foot have been brought forward on many occasions as an argument against neurotomy, and no one can deny that a foot with sensation is better than one without that faculty. But in a long experience of the operation, I have never found these disadvantages outweigh the great advantages which have immediately followed it, even when the foot has been punctured in shoeing or otherwise seriously injured. The process of repair is as active, if not more so, in the foot without sensation as in that possessing it.

But the strongest argument offered against plantar neurotomy, is that it deprives the horse's foot of the sense of touch, and therefore renders the subject of it unsafe for travelling, and especially for carrying a rider, particularly over broken or uneven ground. This argument we have heard employed by

men who were nothing if they were not "practical," and yet they could not offer any instances in which "neurotomised" horses had stumbled or blundered, or had a greater tendency to do so than those which had sensation in their feet. Their objection to the operation in this respect was purely theoretical, though they would be the first to repudiate the imputation that they were "theorists." We have often suggested the desirability of submitting certain lame horses to the operation, but have been met by a refusal, on the plea that the horse would be unsafe to ride. More especially has this been the case in cavalry regiments, and many an excellent troop-horse have I had to recommend to be sold which would have performed excellent service for years, merely because the commanding officer or inspector-general of cavalry had acquired the notion from somebody that "unnerved" horses were dangerous to ride.

That the tactile sense in the horse's foot is useful, it would be idle to deny; but that it is absolutely essential, even, to safe progression, no one who has paid attention to the results of plantar neurotomy will maintain. On several occasions, for years I have hunted, hacked, and driven horses which had been deprived of sensation in their fore-feet, and never had an accident with them. Their action has not been impaired by the operation; on the contrary, it was vastly improved, compared with what it had been previous to it. And my experience has not been singular in this respect, as many competent horsemen can give like evidence after long and severe trials of neurotomised horses. The opponents of neurotomy were probably not aware that there is in progression a *muscular* as well as a *tactile* sense.

Quite recently two excellent examples of the erroneousness of the theory have occurred, which are worth recording if only to rescue a most valuable operation from unmerited disparagement. Two of the finest among the many fine horses in the Second Life Guards, were so lame from Navicular Disease when I joined the regiment, that they were unsafe and unsightly to ride, and were therefore entered on the list to be cast and sold. One was so crippled that it could scarcely be moved out of its stable. Feeling sorry at having to get rid of such good horses, and anxious to give another blow to the mistaken theory, I obtained the consent of my

commanding officer, who patronises practical conclusions, to perform neurotomy. This was carried out on both horses about eighteen months ago ; within a fortnight they were at their duty, absolutely free from lameness, and with first-rate action ; and one of them, from being troublesome and unsteady in the ranks—probably from the pain in its feet—had become quite steady and tractable. Instead of being lame, blundering, and unsafe, both were sound, free in movement, and secure ; and the pain being abolished, they looked improved in condition.

During the month of July the regiment attended the summer drills at Aldershot, and five days every week for a month these horses carried a weight of about twenty-two stone each over the roughest and most dangerous ground, nearly always at a fast pace, and for four, five, or six hours each day ; and yet they never fell or blundered, and the troopers who rode them had unbounded confidence in their sure-footedness. They returned to Windsor at the end of the month's severe test as sound in their paces as when they left, and certainly now offer no indication whatever that they are less safe to ride than any other horses in the regiment. The effects of the relief from pain are also most marked, not only in the altered gait out-of-doors, but also in the stable.

From my experience of plantar neurotomy, I can confidently recommend its adoption by army veterinary surgeons. A hint to them, as well as to others who may not know how to perform the operation neatly and expeditiously, may not be unacceptable. Never make the incision through the skin with the knife, but use the ordinary rowelling scissors. Raise a small fold of the integment immediately over the course of the nerve, but transverse to it, and cut through it with the scissors. The incision should not be more than half-an-inch long, there is no hæmorrhage, and the nerve is exposed by a few touches of the scalpel in a few seconds. Incising the skin by means of the knife is clumsy, slow, and not always safe. The only instruments required are a pair of rowelling scissors (I usually shave off the hair previously with a sharp scalpel), a scalpel and forceps, an aneurism needle, and a narrow and short probe-pointed bistoury.

Editorial.

RABIES AND HYDROPHOBIA IN IRELAND AND ENGLAND.

IRELAND appears until recently to have enjoyed special immunity from *Rabies Canina*, and in "Rabies and Hydrophobia" we have commented on the fact that, while the disease was very prevalent in England and on the Continent, the sister island did not furnish an instance. True, now and again, and after long intervals, a man, woman, or child died of Hydrophobia, and sometimes an instance of cow, horse or pig perishing from Rabies was reported; but so rare were these cases, and so widely were they separated by time and distance, that those who maintained the spontaneous origin of the malady against they who asserted that it is always due solely to contagion, found their strongest support in the history of Rabies in Ireland.

Of late, however, this exemption from a terrible and terrifying scourge has, unfortunately, not been so marked, and there is reason to apprehend that it may manifest itself more frequently than heretofore.

A most painful case occurred in Dublin in July last, which is instructive in more ways than one. A Miss Collins, aged twenty-five years, the daughter of a physician in the Irish capital, died of Hydrophobia on the 30th of that month, in the Meath Hospital, whither she had been removed from her home a day or two previously. It appears that this unfortunate lady had a favourite fox-terrier which manifested a changed disposition, and on the 9th or 10th of June escaped from the house, after exhibiting a surly temper and tearing carpets. On the 11th of that month the animal returned, and its head was then found to be very much bruised and cut, as if it had been fighting with other dogs. While the deceased had it in her arms attending to its injuries, it seized her by the lip and clung to it for a short time. It was subsequently locked up in a room, and in twenty-four hours it died, with well-defined symptoms of Rabies. The wound in the lady's lip was cauterized by a doctor not long after its infliction, and nothing was noticed until July 27th, when she complained of neuralgic pains or "twitchings" in the lip; on the 28th the more serious symptoms of Hydrophobia appeared, and on the 29th she was removed to the hospital, where everything possible was done to save her, but without avail. The lady showed the greatest possible courage and presence of mind, and though she never mentioned the disease, yet she requested those about her not to approach too closely, lest they might be infected; she also hoped she might not be smothered.

The lesson to be derived from this sad case is the great need that exists—a need which we are almost tired of repeating, and have done our utmost to supply—for people who keep or come in contact with dogs knowing the early symptoms of Rabies in these animals. Miss Collins' fox-terrier presented the most suspicious indications possible of the presence of the disease before it escaped from her house, and still more so after its return. The altered, morose temper, the tearing

the carpets, the escape from home, and absence of a day or two, the return home worried and fagged—these are all as characteristic of Rabies as the pustular eruption and fever are of Small-pox. Had the poor lady known anything whatever of dog-madness, she would undoubtedly have put the dog in a safe place, if not before its escape from the house, at least immediately on its return.

In our work on Rabies, and whenever we have had an opportunity of doing so, we have suggested to the authorities—nay, we have begged and implored them—to give this information to the public, *by having it printed on the dog-license paper*. The Paris authorities have adopted this suggestion, and for every human life lost from the disease our government is more or less to blame until it adopts this simple and inexpensive measure. We shall not surely have to wait until some high personage or official dies of Hydrophobia, to see something done for the suppression of so horrible a disorder!

Another feature in this case is not without interest to the pathologist. Rabies is a rare disease in Ireland, and there is nothing to show that the fox-terrier which bit Miss Collins had been itself bitten previous to its appearing indisposed; indeed, so far as we are aware, there have been no cases of Rabies reported in Dublin recently. How or where, then, did the dog contract the disease? or is this another instance of so-called "spontaneous origin," like that we recorded in an early number of the Journal as occurring at Rochester, where for years previously nothing of the malady had been known, and no case has been witnessed since?

We would earnestly warn the authorities in Dublin, and for miles round that city, to be on their guard against outbreaks of Rabies. No one knows how many animals the fox-terrier may have wounded during his long, rabid excursion; it is only too evident from his maimed condition on returning home that he had been in more than close contact with other dogs, and it is still more evident that his saliva must have been very virulent and potent.

In England the disease still appears to be sadly prevalent, though we have nothing except casual evidence to base our assertion upon. The veterinary department of the Privy Council is evidently of opinion that the welfare of sheep and swine is of far more moment than that of the human population. In the north, and particularly in Lancashire and Yorkshire—which have for years been centres of rabific infection—cases are continually occurring. One of the most serious happened in the former county quite recently, and as we go to press, the third human victim of five—one report says twelve—bitten by the same dog at Preston, has died. This case is as interesting in its history as that occurring in Dublin; and as the details have been forwarded to us privately from the owner of the dog, we offer no excuse for offering them here, as they are instructive to veterinary surgeons, and others who are interested in this disease. The Rev. G. R. Pughe, vicar of Mellor, near Blackburn, was the owner of a mastiff bitch, "Varna," thoroughbred, and with a long pedigree. She had been in his possession previous to last September, and was one of a litter of twelve; her dam was remark-

ably quiet, and had not been accustomed to be chained up. The sire was a very quiet dog. The bitch was almost a year old in May; she was remarkably gentle and docile, and had the run of the house, being a great favourite with the children, young and old, who could take any liberty with her, and she was the most gentle, affectionate, and admired of all the many dogs this gentleman had possessed. She was perfectly free from any symptom of disease or ferocity. There were two fox-terriers kept in the same establishment.

On April 8th the bitch appeared to be "in heat," and was therefore tied up in a coach-house; the larger of the two terriers was removed to a place not far off, and the other was chained in the coach-house, though beyond reach of the bitch. She was led out for exercise on five days by the vicar and his son. On April 14th she was sent to a mastiff dog at Witton, and there was nothing whatever suspicious about her then. At Witton there were two mastiff dogs—both old, on chain, and savage. The best of these two would have nothing to do with the bitch, and she bit him on the ear. She was then chained and shut up with the other mastiff in a stable, but she bit him also. Mr. Pughe was not told that either of these dogs bit the bitch, but her neck subsequently showed the scars of wounds. On April 15th she was fed by a young man, and on the following day she got loose and bit him on the finger; the bite was afterwards cauterized. She also bit another man at this place. She was pursued by people with sticks, but found her way home, after worrying a dog on the road, and getting into the carriage-drive of a friend of Mr. Pughe's, where she lay quietly, then bit a dog which was with some children, shaking it twice, and being whipped away by a cabman. On arrival at the rectory, a servant girl reported that "Varna" (the bitch) had returned without her chain and collar, that the animal had jumped at the sexton—whom she knew well—to bite him. Mr. Pughe saw her in the kitchen; her neck looked ruffled and swollen; but he stood by and patted her, while a young child carelessly struck her with a top whip, but she was perfectly tranquil, though apparently distressed, and making a complaining, unnatural kind of noise. A young girl was told to put a light chain round the bitch's neck, and this was done—the animal being then led into the coach-house by the girl, no suspicion existing that "Varna" was mad. Soon after she was seen shaking the terrier outside the coach-house, with the girl near, and who was also snapped at several times by the now infuriated bitch, but not wounded. Mr. Pughe shot at the animal as she lay with her head between her paws looking at him, but she only rose and howled, and at the second shot ran away. On following her, it was found that she had dragged a sheep into the River Darwen and bitten off half its head. She was driven off and then swam the river. We commend this part of the narrative to those ignorant persons who have the temerity to assert that rabid dogs are afraid of water. She was hunted until dusk, when it was reported that she had been shot. On May 14th or 15th Mr. Pughe heard that the two mastiffs at Witton had been shot, one having "gone raving mad," bitten off its own claws, and dug a hole large enough to bury itself in.

Such is the history of this bitch, from whose bites three people have already died of Hydrophobia.

As to the origin of the disease in her, nothing satisfactory can be gleaned. Mr. Pughe holds the following theories, which are given for what they are worth, as there is no evidence whatever that the bitch had been inoculated before being sent to Witton :—That the animal had set her affections on one of Mr. Pughe's dogs, or some other dog—two having been seen near the rectory ; that being in "rut," the outbreak may have been due to over-excitability ; or one of the dogs at Witton, that afterwards went mad, had communicated the infection to her while fighting —though to become rabid in so brief an interval, he confesses, seems impossible.

The anguish, not to mention the trouble and expense, which this clergyman has suffered, have been very great, and it is to be feared they are not yet ended.

The genesis of Rabies is yet, we are ready to confess it, involved in obscurity, and the foregoing cases do not tend to throw light upon it. Nevertheless, we must accept facts before theories, and must admit that if the maintenance and diffusion of the terrifying malady is to be ascribed solely to its contagious principles, instances are by no means rare in which contagion does not appear to operate in its production.

SWINE PLAGUE IN AMERICA.

ACCORDING to the *Weekly Indiana State Journal*, Dr. D. W. Voyles, of the commission appointed by the Bureau of Agriculture to investigate the causes, nature, and best mode of treatment of Swine Plague, or "Hog Cholera," as it is called in America, has made a full report of his observations. The doctor spent a great deal of time investigating the subject, and sums up the results of his observations in a very readable manner. It is evident that he has proceeded, in the study of his subject, systematically and intelligently, and his conclusions are entitled to weight. We present the material portions of his report in full. It opens with a reference to the general prevalence of the disease, and details the plans adopted in his investigations. His observations were made in the counties of Floyd, Harrison, Washington, Putnam, Green, Owen, Morgan, Monroe and Bartholomew. The knowledge and experience of many stock-raisers and dealers were made use of, and dissections were made of a large number of carcases. Not only were the carcases of animals that had died of the disease dissected, but animals in all stages of the malady, from the earliest symptoms to the hopeless stage, were killed for the purpose of dissection. Care was taken to determine whether the disease, as it prevailed in one section, was identical with that prevailing in another. The symptoms which manifest the appearance of the disease, and the course it takes, are given in detail, but as they are familiar to every stock raiser they are omitted. The report proceeds as follows :—

PATHOLOGY.

As before stated, all dead animals, not too far advanced in decomposition, were examined, and one or more sick animals were selected from each diseased herd, and, after a careful study of their symptoms, as compared

with the symptoms of the other sick stock of the herd, they were slaughtered for examination also.

Memoranda of thirty dissections made from fifteen separate and distinct herds, fairly representing the disease as observed under all the varied circumstances as to locality, soil, food, water, and general management, show the following result :—

In every case, without exception, disease of the lungs was present, varying in degree from slight congestion to complete softening from suppurative inflammation. In two cases the lung disease was tuberculous in character.

In eight cases adhesion occurred between the costal pleura and the lungs.

In six cases circumscribed spots of inflammation were found on the walls of the heart and its investing membrane, with effusion in the pericardial sac.

In six cases congestion of the mucous membrane of the stomach.

In four cases small patches of ulceration of mucous lining of large intestine.

In four cases slight inflammation of mucous membrane of small intestine.

In all cases the liver presented a darker hue than natural. In four cases slightly, and in one greatly enlarged, but in all others in size and general appearance would compare favourably with that organ as observed in animals usually regarded sound.

In four cases there was enlargement of the spleen ; in all cases discolouration, as in case of the liver.

In four cases there was slight congestion of the kidneys, in one case evidence of fatty degeneration, in all others that organ indicated a healthy condition.

The blood was always very dark coloured, and the muscles pale, coloured and relaxed.

The disease of the lung was in all cases the leading pathological indication, to which all other diseased appearances observed were secondary in importance, constituting complications only.

A section of the lung of an animal slaughtered during the active inflammatory stage of the disease shows, under the microscope, a complete solidification of lung tissue, the air-cells being filled with epithelial exudation, no fibrin or extravasated blood appearing.

A section of the liver from the same animal shows thickening of the septæ acini and a complete destruction of some of the acini by proliferation of epithelial cells, tending to or constituting, fatty degeneration. Other acini in the same section exhibit a perfectly healthy condition.

A section of the intestines from the same animal shows a healthy condition.

The contents of the stomach and intestines were liquid in six cases, and dry, hard and very black in all others.

The gall bladder usually contained a small quantity of thin, greenish fluid.

The bronchial tubes and trachea contained a large quantity of matter, consisting of mucous and broken-down epithelial tissue.

Character of the Disease.

Judging from the visible causes that appear most active in its development, and the symptoms and pathological evidence disclosed, we feel fully warranted in pronouncing the disease, in its milder manifestation, Bronchial Catarrh, and in its most active and fatal form, Catarrhal Pneumonia.

There is no symptom uniformly present in the disease that bears analogy to those of Cholera as affecting the human family, and the term Hog Cholera is, therefore, a misnomer.

While there is ordinarily but little in a name, in this instance misnaming

the disease has been the source of incalculable loss, by suggesting a line of treatment irrationally administered, and calculated to aggravate rather than cure it.

Its Cause.

It is when seeking the causes of this widespread epidemic disease that the field of investigation takes greatest range. As before stated, it prevails more or less at all seasons of the year, and under almost every conceivable condition and combination of conditions, as to soil, water, food, and general management ; but there is a marked difference in the prevalence of the disease, under certain circumstances, so uniformly observed, that from these facts we may be able to derive some reliable information as to the conditions most favourable to its development.

The past history of the disease seems to indicate that it originated in this country at the time when the condition of swine was visibly altered form a comparative state of nature to one of more perfect domestication. When the country was new, affording almost unlimited range, the hogs bred, grew up, and roamed in the woods until maturity. Being allowed the free use of their noses, and being omnivorous animals, they fed on worms, roots, mast and such other varieties of food as they could find, or was furnished them by their owners. They exercised as their inclination or necessities inclined them ; had free access to numerous springs and streams of running water, and slept in storm-sheltering thickets, on beds of clean leaves, and enjoyed, under these circumstances, a vigour of constitution and an immunity from disease unknown to the modern swine-breeders of the country.

As the country became more densely populated, rendering it necessary to clear and fence the land for agricultural purposes, the lank, active, long-nosed hog of the pioneer age began to disappear in order to give place to a new and more advanced civilization in the history of his race. A close business calculation demonstrated that a hog fed to profit on food the product of manual labour, must have an inbred tendency to lay on flesh, and this tendency encouraged by confinement to limited quarters, and giving an amount of food equal to the highest consumptive capacity of the animal. The hog of to-day is the result of persistent in-breeding for an obese habit, encouraged by want of exercise and over-feeding. An animal quite comely in shape, early in maturity, of strongly developed fattening tendencies, and of enfeebled constitution, is the intelligent and natural result.

An animal thus deprived, in part, of the constitutional vigour of its ancestry, forced to give up the instinctive habits of its race in obedience to the regulations of modern farming, must necessarily have acquired a tendency to disease. If, under these circumstances, in the modern era of hog-raising, the animal is more frequently exposed to disease-producing causes, a general prevalence of disease must be the result. Are there generally present causes operating upon well-known principles of animal physiology, calculated to produce the disease that we have observed ? If not, we are forced, in the absence of visible causes, to indulge in hypotheses, and seek for some hidden specific poison which, operating to produce the disease, may thereafter propagate it by contagion. That the disease is epidemic there can be no doubt : that it prevails as a general epidemic over a wide range of country is established beyond controversy. Can the causes operating in its production be equally general in their presence ? We will assume that the hog of the present time, as compared with his pioneer ancestor, is an animal of impaired constitution ; that his habits, as imposed by the will of the farmer—as to food, water, cleanliness, exercise and rest—do not approach so nearly a strict observance of the laws of health as do the instinctive habits of the animal in an unrestrained state of nature. His habits and opportunities in the latter

state have been briefly alluded to already. What are the altered conditions hat conflict with the laws of health that are imposed in the former state?

Food.—In considering this branch of the inquiry, we will first consider briefly the subject of food. The hog is an omnivorous animal; when he can obtain it he eats both vegetable and animal food; his nature demands and his health requires it. In his natural state he obtains the animal diet from the ground by the industrious use of his nose in digging for worms and insects. The most improved style in modern farming proclaims the nose a useless appendage, and breeds it to the smallest possible size—as a thing of beauty to adorn—a ring. The natural source of supply of animal food is cut off, and the animal compelled to feed almost exclusively on vegetable diet. That this style of feeding, long pursued, is not conducive to the highest state of health would seem self-evident. In the hog-growing districts corn alone is the almost exclusive diet of hogs, from birth to the time of slaughtering, and it is in these districts where the diseases are most prevalent. On the contrary, hogs fed upon hotel and city garbage, in which there is a liberal admixture of both vegetable and animal food, are always most healthful and free from disease.

In the city of New Albany, Ind., there are more hogs to the square yard than are to be found elsewhere in the State. Their rights are held sacred, they roam in any street, sleep in any alley, and break into almost every yard. The average councilman regards them as his minor constituency, and the people have therefore vainly prayed for hog ordinances and hog cholera, and still the animal feeds upon our bounty, multiplies his race, and almost defies disease.

It was observed that a common practice obtains in the White River valley of hauling corn into the fields for convenience in feeding, and placing it in an open rail-pen. The heat and moisture to which it is exposed soon causes it to mould at the cob. All that was examined was more or less damaged and unfit for use as an article of food.

Water.—During the dry months of the fall season it seldom occurs that hogs have a bountiful supply of pure water, even in well-watered localities. The small streams run exceedingly low, and a scant supply of pure water is the usual condition of that season. In all the herds examined, where the disease prevailed, in but two instances was a proper supply of water observed. In a large number of cases there was absolutely no water, only thin mud, at the watering-place. At Mr. Quinn's farm, near Hartsville, Ind., where the disease was prevailing, twelve head of sick animals were running at large in a field of eight acres. When asked concerning the supply of water he said there was plenty—"a good spring." On personal examination I found the spring issued from a hill-side with but little incline. From where the spring issued to the point where the stream disappeared from exhaustion, a distance of some forty feet, there was a long bed of thin mud—no visible appearance of running water at any point. The proprietor was asked, on our return from the spring, when he had last inspected the watering-place. He replied, "this morning." He was then asked if he thought the water furnished by that spring would supply a few head of cattle, or horses, or other stock with suitable water; he replied promptly, "no." He was then asked by what process of reasoning he arrived at the conclusion that water of acknowledged unfitness for any other kind of live stock, was quite good for hogs, and sick ones at that? His reply, in substance, was that hogs would not use water until they had rendered it unfit for anything else. This case is mentioned in detail because of its representing the view taken by the average farmer upon the subject of water for hogs; that any kind of water, however muddy and stagnant, is good enough for them.

Cleanliness.—The domesticated hog does not approximate the habits of his

pioneer ancestor in point of cleanliness. It is the instinctive habit of the animal to bathe in water and wallow in the mud, during the heated term particularly. The first act, to counteract excessive heat ; the second, to protect himself by a coat of mud from the pestilent flies ; but in the state of nature, while running in the woods, when the dirt has served its purpose he immediately cleanses himself thoroughly by friction with the nearest tree. The filthy bed which the animal becomes satisfied to occupy in a state of confinement is never found occupied by hogs running in the woods, and given opportunity to provide and change their sleeping-place at will. The high points, cool and dry, are selected for summer resorts, while south hlll-sides are given the preference in the winter season. In short, when allowed to provide for his own existence he exercises a more intelligent regard for his wants than is ordinarily exercised for him by his more intelligent overseer, who attempts to supersede instinct by reason. The frequent allusions made to the native hog may provoke the inquiry, shall we return to the ungainly and ill-shaped animal of forty years ago? Certainly not. In this age of high-priced corn, he would be unworthy of an existence ; the only thing to be admired of him is his health and constitution ; the only useful lessons to be derived from allusions to his history, is the means by which they were acquired and maintained. Food, faulty in character and wanting in variety ; water, deficient in quality and purity ; quarters too limited in space and filthy in condition, are the three leading factors in the production of the disease of swine.

Special attention was given to the examination of the character of the land occupied by sick animals, and while there were exceptional cases, in a large majority it was observed that they were running in fields producing quite a luxuriant growth of weeds, at that season shedding their bloom, seed and leaves ; the earth was exceedingly dry and dusty. In travelling about the animal created a dust from the earth with his feet, and shaking the weeds, caused the dried particles, being exfoliated, to fall from them ; these two foreign substances were taken into the air passages and lungs with the air, and constituted an active source of irritation. While prosecuting this branch of inquiry we were informed by several intelligent observers that they had discovered that wheat and rye stubble were the places most injurious to the health of hogs, and that when running in such fields they were more prone to disease than elsewhere. The testimony of others, and our own observation, confirms, that it is during the dry fall season that the disease is most prevalent and fatal. It is at this particular season that hogs are most neglected. Having been turned to grass and clover, and allowed to shift for themselves, they prosper and thrive during the summer without attention ; but at the commencement of the dry months there is a sudden drying up of the grasses and failure in the water. The green grass and clover, full of nutriment, give place to that which is mature and dried up, in which state it is indigestible and constipating. It is also at this season that the animal keeps his skin most foul with mud as a protection against flies—materially interfering with its healthy functions as an auxiliary to the lungs and other depurating organs. This is the season in which the cool nights precipitate a heavy dew, and while running through grass and weeds wet with this cold dew, the animal becomes chilled during the morning hours, to be dried off and scorched with burning heat at each returning noon-day. During the night and early morning the animal is chilled, sending the blood from the surface to the central organs of the body, and breathes a cold, damp atmosphere ; and during the heat of the day he is exposed to a high temperature of dry heat, and breathes an atmosphere ladened with dust, sand, and minute particles of decayed vegetation falling from the weeds ; his bowels have become constipated from feeding on dry grass, and his secretions generally deficient. Are not these a strong combination of circumstances well calculated to develop catarrhal

affections, and do they not exist during the period of the year alluded to in all localities, as general as the prevalence of the disease itself. It may be objected that certain exceptional cases occur in which many of the conditions named do not exist, and still the disease prevails. The same objection would come against any possible theory of its cause. As before stated, the disease prevails again most extensively during the months of February and March. This is the season when bronchial and lung diseases are prevalent, in the human subject, due to atmospherical change and exposure to the damp earth in a state of alternate freezing and thawing at that season.

Swine are similarly affected during this period from the same causes, and being more generally exposed to these causes than man, are liable to disease in an epidemic form.

The objection to this rational theory of the disease is, that it is found to exist at other seasons of the year, and under circumstances when almost all the conditions above mentioned are absent and wanting. That it is observed under such circumstances is unquestionably true. In a few instances we observed it where there was no want of first-class care in their management, as to food, water, cleanliness, and shelter ; and where the animals were ranging in clean blue grass pastures, protected from heat by beautiful groves ; but the prevalence of disease under such circumstances was of extremely rare occurrence.

It is the predominant opinion among farmers that the disease is due to some specific poison or contagious principle existing in the atmosphere ; but this theory is maintained under difficulties equally as great as those applying to the former view.

We found the contagion theory generally entertained by the farmers of Putnam county, where the disease prevailed this season for the first time as a general and widespread epidemic. Many claimed that it was communicated by a diseased lot of animals driven through that county from the county of Boone, but many cases occurred on farms remotely situated from the route travelled by the drove of sick animals, and isolated from public highways, and upon which farms no new or strange animals had been introduced, by purchase or otherwise.

A toll-gate keeper on the turnpike near the village of Bainbridge, in that county, had a few animals running at large, and coming in contact with all the animals passing over the road ; they escaped the disease, while others occupying enclosures had it. Numerous instances were reported by intelligent and reliable men, where the disease prevailed upon a farm, with but a partition fence separating the animals sick from those of an adjoining neighbour, and the latter entirely escaped the disorder. There seemed to be a general exception to this in all cases where a stream of running water passed from the diseased enclosure into the one not previously affected, which would indicate that while the disease may not be strictly contagious, it is capable of communication from the secretions of sick animals coming in actual contact with those not before affected, as is the case with almost all infectious diseases.

Experimental tests made in pursuit of this branch of the subject demonstrated that the introduction of diseased matter into the system of healthy animals, by inoculation, generally, but not invariably, produced the disease ; but in the cures where disease followed inoculation, there was no assurance that the animal was perfectly sound, and would not have been the subject of the disease if the operation had not been performed. It is a safe practice, however, to separate the well animals from the sick, at the approach of the very first symptoms of the disorder—a rule that applies with equal force in regard to all kinds of live stock, when threatened with any kind of disease.

The eating of the flesh of the dead by the surviving animals should always

be prevented by prompt removal and burial or cremation, although some farmers claim that by pursuing the opposite course their sick have apparently made better recovery—a circumstance, if correctly observed, only demonstrating that the herd was suffering from want of animal food to such extent that when furnished in a state of disease it actually does more good than harm. Those who hold to the theory of contagion generally agree upon from twelve to fifteen days as the period of incubation. Mr. William B. Taylor, of Martinsville, Indiana, a gentleman of large experience as a feeder and packer, and a close and intelligent observer of the disease, states that when a herd of diseased animals are turned into a field with other animals not previously exposed, the disease will usually run through the entire diseased herd before attacking the other animals; and Mr. Joseph Goss, of Gosport, Indiana, who has been engaged in feeding and packing for twenty years, and who is a most intelligent observer, confirms the observations of Mr. Taylor.

The Disease as Affecting different Breeds.

This branch of the subject was forced upon our attention by parties who claimed, in behalf of certain breeds, a partial or complete immunity from the disease. Unfortunately, our opportunities for observation in this regard were not good, since all the animals we saw were grades in which the Berkshire and Poland China blood largely predominated. The best information gained upon this subject was to the effect that all breeds for which immunity was claimed were those not in general use, and that the absence of loss from such breeds was due to the smaller number of such animals existing in the diseased districts. Such claims were made in behalf of the Chester Whites and Red Jerseys; we saw none of either breed in our travel, sick or well. Possibly the Jersey Reds may escape the disease for one or two generations better than other breeds, from these considerations: They have been quite recently introduced in the West, and are an Eastern bred animal, developed in a section where the practice of inbreeding, overfeeding and close confinement does not prevail to the same extent as among Western breeders, and probably have, therefore, a more vigorous constitution, better enabling them to resist diseased tendencies.

The Recurrence of the Disease.

All experienced feeders agree in the opinion that animals that recover seldom have it a second time, and state that in purchasing animals to feed they always prefer such as have gone through the epidemic.

We are inclined to accept this opinion as of little consequence, for the reason that such as are fed for pork do not afford a sufficient lapse of time to clearly demonstrate this point; and, on the contrary, among breeding animals that are allowed to live older, in which timely opportunity is given, our information is that a second attack is not an infrequent occurrence.

Effect of the Disease on Breeding Animals.

Females having the disease while breeding almost invariably cast their young. If they escape that accident, their offspring usually die soon after farrowing. Subsequent litters, born after the female has entirely recovered from the disease, are equally vigorous with the produce of such as have not had it, and do not exhibit any more aptitude for the disease. The opinion obtains, however, that the male is more seriously affected by the disease, and, after recovery from it, is seldom a vigorous and reliable breeder.

Prevention of the Disease.

The widespread prevalence of the disease, its rapid course and dreadful fatality, fully warrant the opinion that measures of prevention, if discovered and applied, will be more beneficial in their results than the discovery of a

successful line of treatment, unless that treatment shall consist of some specific remedy, a practicable use of which in the hands of the farmer can be made during all stages and modifications of the disease. That such a remedy will be discovered, in our opinion, is not within the range of probability. The measures necessary to prevent disease in domestic animals embrace within their range a careful study of their natural habits and wants, and a strict observance of the general laws of health that govern all animal life, the principles of which are the same in application to inferior animals as to the human race.

Those errors alluded to when considering the cause of the disease as, in our opinion, largely contributing to, if not wholly the cause of its production, must be corrected. The idea that swine are exempt from the ordinary laws of health and disease, and will thrive under almost any condition in life, must be abandoned. Forced to keep pace in his improved development with the advance of the age in which he lives, he requires additional care in his management in order to ward off the numerous ills to which he is liable, many of which are unknown to his race in its unimproved, natural state. The food should consist of as great a variety as possible to supply ; the water drank should be pure ; too many animals should not be herded together : the small animals kept separate from the mature ones ; frequent change from one inclosure to another ; the breaking-up of sleeping places when they become filthy ; they should be strictly observed at the approach of dry fall months, and upon the drying up of the grass, laxative food, as bran mash, or aperient medicine, as soap-suds. Glauber salts or linseed oil given to counteract the constipating effect of dry grass ; the watering places daily inspected ; they should be taken out of the grass and weeds during the night and early morning hours to avoid the dew, and at all times be kept from fields producing weeds, particularly during the season of exfoliation. When confined in close pens, these pens should be daily cleansed by a removal of excrement, and dry earth or copperas, or chlorinated lime used as a disinfectant. The opinion that corn alone contains all the elements of food necessary to the growth and development of swine, is an error that the average farmer will never abandon until taught many costly lessons by experience when attempting to freight his corn crop to market through this uncertain and risky medium of transportation. A judicious and intelligent system of inbreeding cannot be discontinued without reverting back rapidly to the ill-shapen animal of other years ; and we do not insist that the practice of this system, when intelligently and judiciously followed, is deteriorating to the health of the animal ; the practice is only injurious when animals nearly related, having the same defect in constitution and aptitude for disease, are coupled and multiply those defects and aptitudes. Inbreeding occurs among all animals in their natural state, but its bad effects are warded off in great measure by the more vigorous males conquering or destroying the weaker ones, and thereby becoming the sires of the offsprings of the females—thus nature provides for the "survival of the fittest." In artificial inbreeding, considerations as to desirable shapes too often outweigh those relating to the constitutional vigour and health of the animal selected for breeding purposes. Good feeding is the counterpart of good breeding, but there is a marked difference between good feeding and overfeeding or stuffing ; good feeding consists in giving at all times, at regular stated intervals, an amount of proper food to meet the demands of the system for full repairs in waste, and an excess only sufficient to promote the immature growth of the animal ; while overfeeding consists in pushing the amount to the fullest assimilative capacity of the animal with a view to obtain the greatest possible amount of excessive flesh. One is essential to good breeding, the other deteriorating to the constitutional vigour of the animal.

Treatment.

So much time was consumed in considering the more practical branch of the investigation that the remaining time allowed in which to conduct the experimental branch of the inquiry was too limited to afford complete opportunity to arrive at any definite results as to cure. In fact, the entire time allowed for the investigation seems insufficient to the proper conducting of a series of differential experiments as to treatment, by which alone any certain and well ascertained facts can be discovered and established. The publication of the names of the members of the commission appointed to conduct this investigation brought to our notice a large number of so-called hog-cholera cures, whose proprietors asked us to test or allow them to test in our presence. These applications were always coupled with a condition, that in case the remedy proved a cure we should give the proprietor the benefit of an official endorsement of their remedies—they not proposing to make known its component parts. Their object being to promote their private interests, we did not regard the investigation of their private remedies as coming within the range of the duties imposed upon a commission appointed to conduct an investigation at the public expense for the public good, and hence we declined to answer all such applications. As conclusive that no grand discovery has been left in obscurity by such action on our part, we will say that in our travel and intercourse with farmers, no one was found who claimed in behalf of any so-called cure any merits as a remedy for the disease, except in two cases only, where the parties were local agents for the sale of the remedy in behalf of which such claim was made.

The herd of Mr. Quinn, near Hartsville, Ind., of which previous mention was made, was selected as well located, and presenting the disease in the proper stage for experiments as to cure.

The sick animals were confined to proper limits in a small pen, well located as to comfort and health. Having the disease in its first stage, and free from vomiting and purgation, they were given a purgative dose of Glauber salts; after which they were given a solution of bromide ammonia in doses of thirty grains three times per day. This remedy was tested at the suggestion of the department. The food consisted of milk and millfeed.

The animal exhibited great repugnance to taking either food or medicine, but both were enforced as well as practicable, but the result was that little or no effect was observed as due to the treatment administered, the animals dying in about the same proportion as others not treated at all. The animals observed to have the disease everywhere were in the main half-grown shoats and young pigs, and the loss by death was about ninety per cent.

A herd of seven head belonging to Mr. Stodder, of Bartholomew county, were similarly treated with similar results. A herd of five head of animals belonging to Mr. Thomas, of Harrison county, were treated, in which crude antimony in doses of ten grains was given during the inflammatory stage of the disease with no visible curative effects. Many isolated cases were treated by other parties under our direction, in which special effort and pains were taken by treatment, in which linseed oil was used as a purgative, and antimonials as a sedative during the formative and inflammatory stage, followed with tonics in the third stage, but the results under all the various plans were the same—the animals dying in about the same ratio or per cent. Candour compels the admission that in this branch of the inquiry our research was wanting in breadth and extent, and, so far as made, without efficient results.

STABLE MANAGEMENT OF TROOP HORSES IN INDIA.*

By Richard Poyser, F.R.C.V.S. (The Carabineers), Umballa, India.

In dealing with the above comprehensive question, it is not proposed to lay down a *régime* for any one station, province, or presidency, but to record observations and suggestions which, whilst of practical value, shall apply to the country as a whole, founding them on deductions drawn from a lengthened experience and practice, both curative and preventive, over a period of nearly ten years in Bengal, the North-West Provinces, and the Punjab, on the North-West Frontier and in the Province of Oudh.

The happiest results may be expected to accrue where the system of stable management is based on common sense, experience and science ; and where there is unity of purpose and action, with a desire and determination in each administrative and executive agent to do his own duty thoroughly and confine himself to it, there will be little or no cause for complaint ; whilst a system biassed by custom, trammelled by prejudice, and perverted by inexperience and interference, must, as a matter of course, be attended with indifferent—nay, disastrous results. Of negligence and want of supervision we have nothing to say, excepting that they should not be conspicuous by their presence ; a partial or entire co-existence of such influences is very undesirable. Differences of opinion, and misconceptions of duty, will occasionally run riot in the "best regulated" troop stables, and it is much to be deplored that the management of horses in health, and their treatment in disease, should now and then give rise to controversy.

With this preliminary, we start by asserting that *Stables are essential to the well-being of horses, troop or otherwise, in India.* This being an incontrovertible fact, reasonable expense should not be spared in designing and constructing buildings that shall at once be suitable, durable, economical (in the long run), readily influenced by sanitary measures, and even portable.

The conversion and improvement of old stables will not be considered here, as individual cases must of necessity be separately met and disposed of.

Many troop horses have been lost to the service, temporarily and permanently, from want of protection from inclemencies of weather, climate and insectile annoyance. Our troop horses are only sheltered overhead : they are insufficiently protected from the prejudicial influences of hot, cold, dry or damp winds and draughts, from the sun, drifting rain, and dust. Of course some troop stables are vastly superior to others, but none are protective enough at all times and under all circumstances : they meet few exigencies of the hot, and fewer of the cold, season.

It is argued that exposure, or living in the open, inures horses to the hardships of marching and manœuvre, campaigning and camp life generally ; but this argument is almost unsupported, and is rendered untenable when we reflect that the above conditions of the troopers' existence are quite exceptional, and that it would be but feeble policy to direct our actions by events which are *not* the rule.

The more care that is taken—short of pampering—of the horses that are bound to be kept up on a peace establishment, the more prepared will they be when required for opposite emergencies, and the public exchequer will be none the more taxed eventually.

Analogically reasoning, *we* do not lead lives of exposure from choice, nor is it found compatible either with reason, health, or the country's interest to permit our soldiers to do so, just because there is the chance of an annual march or manœuvre, or a campaign once in twenty years : the contrary course

* This is the essay which gained the first of the prizes recently offered by Mr. F. F. Collins, Principal Veterinary Surgeon, Bengal.

is signally observed, and the contingencies and hardships of camp and war are put up with cheerfully enough when they do arise, and endured none the less stanchly. So with our horses. Give them plenty of space and air, adequate shelter and protection, good food and water, and a sufficiency of both, regular and not too little exercise; insist on good grooming and scrupulous cleanliness and sanitation, and then there will be nothing to fear whenever they are called upon to act beyond the ordinary routine of cantonment life.

With one or two exceptions, the horses of British artillery and cavalry are stabled; but the reverse is the case with Native cavalry, and for that we can see no very valid reason. It is, however, to be remarked that the horses of the latter corps stand the climate of India better, being mostly indigenous, than the imported ones (Walers), which are now, more than ever, filling the ranks of the former corps, though not better than our stud-breds and the other imported ones, Arabs and Persians. These two latter come very nearly under the head of indigenous. It is also true that the Sowar's horse costs, or used to cost (times and prices are fast changing) about three times less than that of a British corps; but then it was purchased from a source but little patronized by Government, and, it may be said, monopolized by the Native cavalry. This it has now lost, and is not only giving higher prices, but crying out that soon it will not know how or where to remount itself. Hitherto Government has had no very direct or apparent responsibility in the native trooper's allotment, feeding, well-being or diseases, unless in the case of horses attacked by Glanders or Farcy, when a limited compensation is allowed.

It is to be inferred that as this class of horse becomes dearer, so will arise the necessity of providing stabling for the more expensive article. Notwithstanding his exposure, however, to all kinds and vicissitudes of work and climate, he compares very favourably with our own troopers in many ways, because the Sowar has a monetary interest invested in his mount, and this implies the observance of more than ordinary personal care.

Many of the Indian troop stables should be entirely demolished, and new ones built on virgin ground where practicable; as an instance of some of the worst, we could mention those of Meerut and Peshawur. The former are merely low, flat-roofed, and narrow bullock sheds, the latter rude shelter sheds, hemmed closely in on three sides, and huddled into an inadequate space.

There are few troop stables and lines that are not over-crowded, and one of their greatest faults is the want of superficial and cubic space. There must be an abundance of both to obviate crowding, than which, with ill-ventilation, nothing militates more against the health and utility of horses, or aids more in filling the hospital. The stables are neither deep enough to afford protection from sun and rain, nor are they wide enough per stall to ensure comfort. The central passages are too narrow, the roofs of most are too low, and badly or not at all ventilated. The ranges are too near each other, and the entire blocks are in many places so hemmed in by trees, human and other habitations, offices, workshops, saddle and harness rooms, gunsheds, urinals, "rears," etc., that ventilation is seriously impeded and thorough drainage interfered with, thereby favouring the development of diseases and enhancing their dissemination. Several or many of these defects, if not all, are noticeable wherever British mounted corps are quartered, and they exist in a greater degree in most native cavalry lines.

The close proximity of stables to human dwellings is neither good nor healthy for the occupants of either in any climate or country, and therefore this needless huddling together of animal life should be studiously avoided, and corrected where existing; for in India there should be no feasible excuse of want of ground.

The worst description of troop stable in England is that over which troops live. It is warmer in winter, but more stuffy, hot, and objectionable in summer than that *best* of all stables which is *open to the roof*, and having ridge or roof ventilation. The warmth of stables under troop rooms, and the horses' finer coats, are maintained at the expense of free ventilation, which cannot be very well arranged to provide due convenience to the residents above or below.

In India, though there is no difficulty of this kind to contend against, it is very remarkable that there still exist pitched roofed stables, with but little ridge or roof ventilation, or none at all. It is with the position, proximity, and character generally of the surroundings of our troop stables that we find fault, as well as with the disposition and construction of the stables themselves, all of which will meet with full and minute consideration as we proceed.

With few exceptions Indian troop stables are too clumsily built ; the pillars are generally too bulky and numerous ; the end walls are not sufficiently ventilated, or ventilated too much.

They might be open above a dwarf wall of six or seven feet, or if the walls be continued to the roof, to counterbalance wind-pressure, they should be constructed by omitting alternate bricks above the height named.

The stable required is one that provides shelter from a tropical sun and monsoon rains ; affords ample standing room ; admits an adundance of fresh air ; mitigates the force of hot winds ; subdues the intensity of solar light, and thwarts or prevents the attack and annoyance of flies and other biting or stinging insects ; gives speedy and sure exit by its spaciousness and ample ridge ventilation to the products of exhalation and respiration, to the foul emanations arising from excrementitious matter, whose decomposition and fermentation are accelerated by the high temperature ; whilst it should be so constructed and arranged as to protect the horses from the cutting winds, draughts and cold of winter (or the cold season). The seasons of the plains of India, for which it is necessary to make these various provisions, are divisible into *hot* and *cold*, each bringing its own special and inseparable climatic vicissitudes ; for instance, hot, dry, and scorching atmospheric rarefaction, with or without wind ; heat and moisture without aerial movement ; a lower temperature with wind often charged with moisture and miasmata,—all conditions more or less oppressive and enervating to animal life. Then we have cold dry, piercing and searching in its character, cold with dew, fog (to a limited extent in some parts), with or without winds and chilling rain, very cold nights (hottish days), and frost (and occasionally hail) in Upper Bengal, increasing in severity and lasting longer to the northward.

Hitherto, the apparent object in constructing stables has been to afford shelter against vertical solar rays and non-drifting rain, or to *feebly* meet the exigencies of the hot season. Heat is not the *only* climatic power against whose baneful effect horses must, if possible, be protected. It is high time this error was corrected. The bracing and re-invigorating effects of cold on the system are well-known facts, but cold ceases to act beneficially when the degree of chilliness or shivering is reached : then it loses its tonic influence and becomes depressing to vitality, and is dangerous when long continued, draughty or accompanied by rain. Draughts are to be avoided or the open picketting is preferable.

Cold acting on a vast surface like a horse's skin, will destroy functional equilibrium, not only in that organ, but in organs that are more or less vicarious to it, not excluding those of the digestive system ; a congestive condition is set up, defective secretions are induced, or functions are more or less suspended and active disease supervenes. This is what is generally understood by the result of a *chill*. The remote influence of cold artificially produced

by the wind blowing on a horse's skin that is freely perspiring is often observed in the hot, dry season, on the throat and nasal chambers, causing an irritable cough, and frequently extensive mucoid defluxion from the nose. Examples of passive hyperæmia—the dark purplish or leaden discoloration—of the membranes of the nostrils may be seen in the early mornings, when the cold is most searching, before the sun has warmed the air, or exercise or warm clothing has removed the condition.

The evil effects of colds on horses, whether it results from atmospheric disturbances, such as dust storms or the monsoon rains, which are often accompanied with much wind—whether it exists as the constant condition of the cold season, its severity being at the maximum during the night and just before sunrise, no matter how or from what quarter engendered—must be cautiously watched and methodically guarded against. Less danger arises (to horses) from exposure to heat than to cold, and from the influence of either condition, shelter overhead is better than none at all, provided there are no counter-influences in the way of bad ventilation and mal-sanitation; yet, when we use this same stable to meet the exigencies of the hot season, and then expect it to suffice for those of a Punjab of North-West cold season, without making other provision against cold draught, wind and rain than that which a couple of country blankets can give, we fail most signally at the outset of our stable management.

Warmth is as necessary to keep a horse in health, condition and bloom as it is to us. Troop horses would be much better off in the open if they were well clothed in winter, than in many of those draught-creating fever and colic-producing buildings, yclept stables (except perhaps during rain). Their very construction renders them nothing more nor less than a series of draughty passages. When a building is neither suitable for the hot nor the cold season, it cannot be considered a very satisfactory dwelling for horses; and we can hardly hope to construct stables that will be, without periodical alterations and additions, in a climate having so many variations of character and extremes of temperature. A new and remodelled class of stable is desirable, whilst the conversion of old ones calls for careful attention. We shall not deal with the latter, but describe plans in detail of the former calculated to approximate the desiderata expected, to withstand wear and tear, seasons and the test of time, and to furnish unquestionable advantages to our troop horses, and *eventually* to the public purse; but economy at the outset must not be too much considered, but will assuredly come with the future.

(To be continued.)

CHRONIC MULTIPLE PERIBRONCHITIS IN THE HORSE.

In the early numbers of the *Wochenschrift für Thierheilkunde* for this year, Professor Dieckerhoff, of the Berlin Veterinary School, publishes an important communication he made to the Veterinary Society in that city, relative to the difficulties which attend the diagnosis of Glanders, and especially in determining whether certain morbid processes should or should not be considered as glanderous in their nature. After pointing out the essential characteristics of Glanders, he draws attention to what he describes as Chronic and Idiopathic Peribronchitis—a condition which will be identified in this country as the Phthisis described by some veterinarians as occurring in the horse.

Dieckerhoff says that in the course of the disease, nodosities are formed on the walls of the bronchules, varying in size from that of a millet-seed to a

pea. At first these pathological productions offer, on section, a certain degree of resistance and density, as well as a shining appearance ; later, however, this appearance is lost, and the nodules assume a greyish-white colour—become, in fact, fibro-caseous. Some of the nodules are situated at the side of the bronchules ; others surround them, and each of these has in its centre the canal of a minute air-tube, obliterated, as it were, by a plug of mucus. The adjacent pulmonary tissue is healthy, and perfectly crepitant. At a later period the cells composing these little masses undergo a degenerative process which transforms them into a dry greyish-white *détritus*, while the outline of the nodules appears more or less irregular and angular when looked at on a surface-section of the lung. The final transformation these neoformations assume is that of calcification, though it would seem that the nodules may exist a very long time, perhaps for years, without undergoing this transformation, which, after all, Dieckerhoff had rarely witnessed. All the horses in which he had observed these lesions had them in both lungs, though more frequently one was more affected than the other ; sometimes they were enormous in quantity.

Among the different varieties of *Peribronchitis Chronica* described by the principal authorities in anatom-pathological science, and who have occupied themselves with this disease in mankind, that (see Buhl, "Lungenentzundung, Tuberculose und Schwindsucht," 1873) which they have described under the name of *Peribronchitis Nodosa* offers the greatest resemblance to the alteration studied by Dieckerhoff. He is therefore disposed to accept this designation for the disease in the equine species, though he is aware that certain writers consider *Peribronchitis Nodosa* as a form of Tuberculosis ; but in the horse at least it has no relationship with the latter.

With regard to the existence of an idiopathic *Purulent Peribronchitis* in the horse, Dieckerhoff had not sufficient evidence before him to decide upon. Before the important researches of Virchow were made known, the Chronic Peribronchitis of man was generally considered as tuberculous in its nature, and the Berlin professor thinks the pulmonary affection described by veterinary writers under the name of *Tuberculosis of the Lung* might be nothing more or less than a *Chronic Multiple Peribronchitis ;* at any rate, Dieckerhoff had never met with Miliary Tuberculosis in the horse. The three examples of multiple nodular formation observed by Pflug ("Zur Pathologischen Zootomie des Lungenrotzes der Pferde," 1877) were probably only cases of Peribronchitis.

Dieckerhoff could not furnish any evidence with regard to the causes of this *Peribronchitis Nodosa* of the horse. But the disease being seated in the bronchial capillaries, together with the multiplicity of centres, as well as these being apparently all of the same age, led to the supposition that some atmospheric influence, which had only acted once on the patient, was perhaps the cause of the lesions. This, however, is given as even less than a hypothesis, as there were no certain facts to support it.

One interesting remark made by the professor is, that never to his knowledge had the presence of the multiple nodosities caused any derangement in the health of the horses so affected ; on every occasion on which they were observed there were secondary lesions. If, *a priori*, an opinion was sought, Dierckerhoff would be inclined to say that this condition would give rise to certain kinds of "broken wind," especially as certain medical authorities think that this lesion produces obliteration of the alveolæ and bronchules. The professor would not go so far as to assert that "broken wind" was really due to this condition, though it might be so in certain instances. In three cases which were under observation for several weeks, and which exhibited no symptoms of dyspnœa, a great number of nodosities were found in both lungs after death. The entire absence of any respiratory disturbance in

these cases, is explained by the fact that the pulmonary parenchyma was not involved.

With regard to prognosis, Dieckerhoff considers this condition as merely an unimportant anomaly. But, on the contrary, its importance with regard to a differential diagnosis with Glanders is very great. It is of much moment to know that *Peribronchitis Chronica Nodosa* may be present in the horse, and be mistaken for Glanders.

The most important feature in differentiating the lesions of the two maladies is to be found in the fact that in Pulmonary Glanders the nodules are in general of different ages, and particularly that those of recent date show on section a large degree of vascular redness. If it exceptionally happens that greyish-white or calcareous Glander nodules are not found in the lungs, there are at least other pathological lesions which allow a diagnosis to be arrived at, and these are to be met with either in the respiratory mucous membrane or in other organs.

In any case, if the lungs are alone the seat of numerous small greyish-white nodules possessing somewhat similar characters to those of Glanders, and if a careful examination of other organs does not lead to the discovery of any evidence of that disease, there is ample reason to conclude that the nodules are due to a benignant Chronic Multiple Peribronchitis, and that suspicion of Glanders is not justifiable.

AN EPIZOÖTY AMONG LARGE GAME AND CATTLE AT MUNICH IN 1878.

DURING last year, we on several occasions alluded to an outbreak of disease then prevalent in the summer among large game and cattle in the neighbourhood of Munich, which, in most of its characters, resembled Anthrax ; and we mentioned that Professor Bollinger, of the Munich Veterinary School, was investigating the malady. The Professor has published the result of his researches in a pamphlet entitled " Ueber eine neue Wild-und Rinderseuche welche im Sommer, 1878, in der Umgebung von München beobachtetwurde ;" and as they are more than usually interesting, from the fact that a similar epizoöty—very fatal in its effects—reigned among deer in this country, we give a *resumé* of his labours.

The disorder attacked deer and wild boar, and was transmitted from them to cattle. The period of incubation was very brief—only a few hours,—and the course of the disease extremely rapid—its duration being in general twelve, twenty-four, or thirty-six hours, rarely more than three days. So far as could be discovered, no sick deer or boar ever recovered. The autopsy of dead animal revealed the existence of Croupal or Fibrinous Pneumonia, Pleurisy, Pericarditis, Mediastinitis—all of which constituted the pectoral form of the disease, and assimilated it to a contagious Pleuro-pneumonia. In other instances, there was Erysipelas with inflammatory Œdema, constituting the exanthematic form of the disease—a kind of contagious Erysipelas.

When the disease assumed the pectoral or thoracic form, the lesions were analogous to those met with in Croupal Pneumonia of man and the Pleuro-pneumonia of cattle. Fibro-serous and cellulo-fibrinous exudations were found in the serous cavities ; the blood did not exhibit any indications of alteration ; there were sub-pleural, as well as sub-pericardial ecchymoses, while the intestinal canal presented the alterations met with in Enteritis.

A microscopical examination of the blood revealed the presence of Bacteria, though these were suspected to be developed after death. However, rabbits inoculated with fresh blood died within six to eight hours, and sheep and

goats in thirty-six hours. Nothing very noteworthy was discovered in these animals after death.

In the bovine species, the disease was observed either in the exanthematic or the pectoral form. In both forms there was found a hæmorrhagic inflammation of the small intestine after death ; but in the exanthematic there was inflammatory Œdema around the head and face, and more especially about the throat and between the branches of the lower jaw, as well as at the lower part of the neck. This Œdema appeared in from six to twelve hours, the skin, with the subcutaneous connective tissue, attaining a great thickness during that period, while the slightest manipulation caused extreme pain. This tumefaction was due to a serous or sero-hæmorrhagic exudation diffused throughout all the soft textures of the head. When the disease assumed the pectoral form, at the autopsy were found the lesions above-mentioned—Croupal Pneumonia, Pleuritis, and Pericarditis, in different degrees. Some bovines recovered.

A bull, eighteen months old, which had ingested, along with its fodder, two grammes of the sanguinolent fluid from the intestine of an animal which had perished of the disease in the exanthematic form, died fifty-four hours afterwards. At the autopsy the lesions of Pleuro-pneumonia were found. A hog inoculated with some drops of blood from an animal which had succumbed to the malady in the pectoral form, was quickly attacked with acute Erysipelas and died in twelve hours. A cow, also inoculated, soon presented an extraordinary tumefaction at the seat of inoculation, and died thirty hours afterwards.

Bollinger, in commenting on the results of these experiments, concludes that the two forms of the epizoöty are produced by the same cause or causes, and that the exanthematic form may give rise to the pectoral, just as the pectoral form may produce the exanthematic.

He is of opinion that the epizoöty prevailing among the cattle, as also that affecting the large game, was due to the same virus. A minimum quantity of virulent matter, when inoculated, was sufficient to produce the disease, which could then be propagated by the sale of the flesh of animals slaughtered for food, as well as by the sting of wasps and flies.

Bollinger thinks the disease is not exactly Anthrax, and that it differs from it in its nature ; though he admits that it is an *infectious* disease of a peculiar character, and hitherto unrecognised, but as to the extremely acute and nearly always fatal tendency of which there could be no doubt. He notes that in the animals which had succumbed, he did not find that specific colouration so characteristic of Anthrax blood ; neither did the blood contain Bacteria, and there was no enlargement of the spleen.

With inoculated animals the characteristic Anthrax Bacteria were never discovered, and the malady was more rapid in its course than Anthrax. He was therefore inclined to think that the disease, which had manifested itself before 1878, had been confounded with the different forms of Anthrax, and described as such.

There was no instance of transmission of the disorder to people who had consumed the flesh of diseased animals, nor yet among those who had flayed and cut them up, even when they had wounds on their hands. Yet it happened that a labourer who was at work in the vicinity of a deer which had died, was bitten by a fly, and presented the general symptoms of the affection ; these, however, disappeared in about eight days. Looking upon the outbreak from this point of view, he considered there was no occasion to resort to the sanitary measures in force for the suppression of Anthrax.

In conclusion, Bollinger states that the epizoöty which prevailed during the summer of 1878 among large game and cattle was a new contagious disease, which first manifested itself among deer and wild boars, and from

them spread to cattle. The malady had some analogies to Anthrax and Contagious Erysipelas, and assumed the pectoral and exanthematic forms, but in both there was hæmorrhagic inflammation of the intestine. The disease could be propagated by contact and inoculation. The virus resided in every part of the body, and its propagation was endogenous—for there was nothing to prove that it was ectogenous. The cause was undoubtedly the presence of a fungus in the blood. The transmission of the disease to mankind is not certain, but it could be readily produced in sheep, goats, and horses (two instances are recorded in the latter species), and especially rabbits, by inoculation.

NEURALGIA OF THE TRIGEMINAL OR TRIFACIAL NERVE IN A HORSE.

THE existence of Neuralgia in the lower animals is most difficult to diagnose, and though there is no reason to doubt that in some of them it may frequently occur, yet in English veterinary literature it is not described, so far as we are aware. Recently we communicated an instance—unique, we believe,—occurring in an animal under observation, of what was probably *Tic doloreux*, to Mr. Hill, who has published it in his work on the dog. Continental veterinarians have enumerated Femoro-popliteal Neuralgia or *Sciatica*, Cervico-brachial Neuralgia, Dorso-intercostal Neuralgia, Lumbo-abdominal Neuralgia, Mammary Neuralgia, and Neuralgia of the Testicles, as well as Trifacial Neuralgia; but with the exception mentioned as occurring in our experience, neither of these forms have been described by English veterinarians.

In *Tic doloreux*, as observed in the horse by foreign veterinary surgeons, there has been a kind of symptomatic Ophthalmia, with conjunctival redness, lachrymation and photophobia, slight nasal discharge and ptyalism, accompanying the Neuralgia; as well as, in some instances, marked muscular contractions on the affected side of the face. Renner appears to have been fortunate in finding opportunities for studying the disorder; and he states that the eyes are fixed and sparkling, ears moved and thrown back as if the horse were vicious, the head is sometimes twisted round towards the neck, and at times a scream of pain is emitted like that which attends the application of the twitch in some animals; in other instances the horse kicks, paws, or rears. The attacks are usually periodical; and Renner avers that the presence of a man will sometimes check the external manifestations of the disorder, the horse being afraid of a beating. Ulrich, of Breslau, describes a case of *Tic doloreux* in which the condition named "immobility," or staggers supervened.

A recent instance, and perhaps one of the best-observed cases of Facial Neuralgia, is recorded by M. Mathieu, of Opheylissem, in the Report on the Sanitary Condition of the Domestic Animals in Belgium, for 1876. What enhances the value of the case is, that it was under observation for four years.

At the fair of Tirlemont, in February, 1873, Mathieu bought a cross-bred English horse, eight years old, which appeared to be sound. Next day he was astonished to find it presenting all the symptoms of Ophthalmia, affecting the left eye. The eyelids were closed, there was abundant lachrymation, conjunctival redness, slight contraction of the pupil, flow of a limpid serosity from the nostril, and an absence of evident alteration in the other parts of the eye. In the course of six or seven hours these symptoms disappeared, but reappeared on the following days. Towards the end of March the attacks gradually diminished in frequency and intensity, and ceased altogether at the end of April. Sometimes one eye, sometimes the other, was affected, but rarely were both eyes simultaneously involved.

Next year, during one of the first days in February, the horse, after active exercise for some hours, commenced to shake his head, as if to get rid of some foreign body lodged in one of his ears, which were thrown back as if the animal were angry. After fifteen days to three weeks, symptoms of Ophthalmia—of the same character as in the previous year—were added to these manifestations.

The attacks were at first so infrequent as seven or eight days, but the interval gradually diminished until towards the end of February, when at last they became quotidian. Travelling fast against a cold and damp wind increased the intensity of the attacks, which continued as in 1873, and terminated at the same epoch.

In 1875 the malady appeared in the same way and with the same characters, and disappeared at the usual period. In 1876 it was the same, except that the attacks were more severe, and in addition to the symptoms already described, there were others, which Mathieu thought due to a Dental Neuralgia.

In the prehension of oats the horse drew back suddenly, as if some foreign body in them had pricked him ; and mastication was performed slowly and with difficulty. The prehension of soft or pulpy food was accomplished with much less difficulty. These symptoms only continued for four or five days, and during this period Mathieu carefully sought for painful points about the face, but without finding any.

THE WAR IN ZULULAND.

THE campaign in Zululand, which is now drawing to a close, if it is not already ended, has not been without interest to veterinary surgeons, particularly those in the army. In many respects this part of South Africa was a *terra incognita*, and nearly everything relating to it had to be discovered as the war progressed. This was a serious disadvantage to the Army Veterinary Department, which found itself in presence of unusual difficulties beyond those experienced in ordinary warfare. Not only this, but the very long sea voyage to Natal, and the large number of horses embarked from this country, as well as mules from America, necessitated an amount of prevision and care which is not usually required. We have already referred to the success which attended the transportation of these animals, and we have only now to add that the last ship which left England carrying a large number of remounts only lost one horse in transit.

Notwithstanding the effects of sudden change of climate, absence of shelter, insufficient, bad, and often unaccustomed food, severe toil and hardship, the presence of that as yet mysterious malady—Horse-sickness, strange and sometimes poisonous pasturage, bad water, parasites, as well as the casualties incidental to irregular warfare in a savage country, the losses have been remarkably few. Of 1,581 horses landed at Durban, up to June 23 only 77 had died and been destroyed, and 57 remained on the sick report. Of the deaths, 21 were due to Horse-sickness, 1 to snake bite, and 9 to poisoning by what is called "tulip-grass." We shall refer to the latter in our next number, as we have received a description of the symptoms induced by the plant, as well as a specimen of the plant itself. It may suffice here to note that it does not belong to the grasses nor yet to the tulip family, but is a cormaceous plant, with a leaf like the snow-drop. Other deaths were due to chest affections (16), derangement of the digestive organs (10), Farcy (1), rupture, paralysis, abscess, Laminitis, debility, etc.

The mortality among the draught oxen has been very great ; on the Lower Tugela as many as 12 were dying every day, the cause being insufficient supply of grass and general unhealthiness of the coast, together with foul camping-ground around Forts Pearson, Tenedos and Chelmsford.

"Lung-sickness" (Contagious Pleuro-pneumonia) must also be credited with some share of the mortality, and it is apparent that the herds of the Zulus themselves are not free from the scourge.

Veterinary surgeons Morgan and Killick were suffering from Fever at Fort Chelmsford.

CONCRETIONS IN BURSAUTTI ULCERS.

A SHORT time ago our colleague, Mr. Meyrick, of the Royal Artillery, sent us some small, hard, reddish pieces of matter which he had removed from Bursautti sores, and which the natives designated "kunkur." His description of them appears in the Journal for November last. Dr. Thin, to whom we handed the specimens for microscopical examination, could make but little of them. When a portion was examined in water, it appeared to be quite amorphous ; with acetic acid it looked somewhat like a hardened cell-conglomeration, but the appearances were not sufficiently marked to justify a statement. The masses may be, and probably are, concretions of pus and epidermic cells formed by heat and dryness. No parasites or organisms of any kind could be detected.

TREATMENT OF ANTHRAX WITH CARBOLIC ACID.

SOME time ago we suggested the desirability of testing the therapeutical action of carbolic acid in the very fatal anthracic disease known in India as "Loodianah Fever." The principal veterinary surgeon at Simla, Mr. F. F. Collins, reports to us that of eighteen cases of the disease occurring at Barrackpore, eleven have been cured by administering half-drachm doses every four hours, with aromatic spirits of ammonia in the intervals. This success is very gratifying, and in urgent cases it might be greater if larger or more frequently repeated doses were given.

THE COLLINS' PRIZE ESSAYS.

IT is announced that the award of the two prizes of two hundred and one hundred rupees, offered by Mr. F. F. Collins, Principal Veterinary Surgeon, India, for the best essays on the Stable Management of Horses in India, has been made. Mr. Poyser, F.R.C.V.S., "The Carabineers," being the winner of the first, and Mr. Queripel, Royal Artillery, obtaining the second prize. The judges were Major-General Sir Frederick Fitzwygram, Bart., F.R.C.V.S., Inspector-General of Cavalry, Mr. J. Collins, F.R.C.V.S., Principal Veterinary Surgeon, and Mr. G. Fleming, F.R.C.V.S., 2nd Life Guards, who were much gratified with the merits of the essays. We have much pleasure in publishing the first portion of Mr. Poyser's essay in the present number of the Journal, the remaining portions appearing in due course, and we would commend their careful perusal to the younger members of the Army Veterinary Department more particularly, as well as to all who are interested in the welfare of our great Indian empire.

HORSE-POX.

THE subject of Equine Variola must always be of interest to the enlightened veterinary pathologist, from the circumstance that when transmitted to the bovine species it produces Vaccinia, and this again, when conveyed to mankind by inoculation, confers protection against Small-pox. It possesses additional interest for English pathologists, from the fact that it was first described by Dr. Loy, of Pickering, in 1802, and though no mention is made of it in our professional literature, except in "Veterinary Sanitary Science and Police" (Vol. ii. p. 73), yet the disease is sometimes prevalent in this country, and has been carefully studied by veterinarians and others at various times on the Continent.

Quite recently an epizoöty of the disease occurred in France, and three medical men, MM. Pingaud, Viseux, and Thomas, availed themselves of the opportunity to make some experiments. Pingaud selected a four-year-old horse which had previously been quite healthy, but which at the time he began his experiments had a very well marked discrete eruption of vesicles covered by crusts in the neighbourhood of the shoulder, as well as others inside the cheeks and upper lip. These latter were not crusted, but had a white or pearly hue. The fluid in these was carefully collected, and seven young soldiers who had not been vaccinated were inoculated with it. After an interval of six days, six of these men had small pustules with inflamed base on the point of inoculation. From four of these cases lymph was obtained sufficient to inoculate sixty-four soldiers, eight of whom had not been vaccinated. The result of this further experiment was the development of forty characteristic pustules, being sixty-four per cent. of successful inoculations, which were unattended with any serious accidents, a very few only having furunculous appearances. Calves were also successfully inoculated with the Horse-pox virus, and from them secondary inoculations were made on people; but the activity of the virus appeared to have become diminished in passing through the calves, for, strange to say, the proportion of the successful vaccinations was forty-eight per cent.

During former experiments carried on at the Alfort Veterinary School, some accidents of a more or less serious character occurred. But Pingaud is of opinion that they were owing to the way in which the inoculation was made. He avoided mishaps by using only the fluid in the pearl-like pustules on the mucous membrane of the mouth, which he found to be quite innocuous, being satisfied that the blood, saliva, and crusts are septic. In proof of this all his cases ran a simple course; whereas a man who had inoculated himself with fluid from a cutaneous pustule suffered from Lymphatitis.

Proceedings of Veterinary Medical Societies, etc.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT a meeting of the Scottish section of the Court of Examiners, held in Edinburgh, on July 14th, the following students passed their Second Examination:—

Edinburgh New Veterinary College.

Mr. William Summers.
„ John Aitken.
„ William Edward Livock.
Mr. John Fisher Thompson.
„ James Joseph Mullally.
„ John Edwards.

Edinburgh Veterinary College.

Mr. John Teggart. Mr. Robert Levie.
Mr. Johnson Gibbins.

Messrs. William Edward Livock, John Fisher Thompson, John Teggart, Robert Levie, and Johnson Gibbins passed with great credit.

At the meetings held in Edinburgh and Glasgow, on July 15th, 16th, 17th, 18th, and 19th, the following students passed their First Examination :—

Edinburgh Veterinary College.

Mr. John Roberts.
„ William Cassells.
„ Richard William Burke.
„ Thomas Gilchrist.
„ William Fairbairn.
„ John Alexander Thompson.
„ John Beattie.
„ John Bull.
„ William Henry Jones.
Mr. John Joseph Doyle.
„ Robert William Powell.
„ John Robert Beech.
„ James Gibson.
„ Patrick Dundon.
„ Thomas Wright.
„ William Watt Dollar.
„ William James Powell.
„ James Fitzgerald.

Edinburgh New Veterinary College.

Mr. William Woods.
„ Henry Cooper.
„ Thomas Green.
„ Isaiah Leather.
„ John Jones.
Mr. William Graham.
„ James Bell.
„ John Francis Healy.
„ Frederick Eugene Rice.
„ Joseph McCauley.
Mr. John Metcalfe.

Glasgow Veterinary College.

Mr. William Davies Hunter.
„ Alexander Macadam.
„ James Somerville Bond.
„ John Blackley.
„ Richard Ebbitt.
„ Henry Rogers.
„ Benjamin Headley.
„ Alexander Crichton.
„ James Fleming Alston.
„ Robert Roberts.
„ James Arthur Gosling.
Mr. T. Montgomery McCauley.
„ Andrew Carnduff.
„ Michael Yeats Lees.
„ John Taylor.
„ Archibald McNicol.
„ Robert Black.
„ Thomas McLay.
„ John Freeman.
„ James Marsh Robinson.
„ William Watt.
„ Frederick Foster.
Mr. Gavin Alston Herron.

Mr. William Watt Dollar passed with very great credit; and Messrs. John Roberts, Richard William Burke, John Alexander Thompson, John Joseph Doyle, John Robert Beech, William James Powell, William Woods, Thomas Green, William Davies Hunter, Richard Ebbitt, Henry Rogers, Robert Roberts, James Arthur Gosling, John Taylor, John Freeman, James Marsh Robinson, and William Watt, with great credit.

ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

Prize and Honours List—Summer Session, 1879.

Chemistry—Gold Medal, William Watt Dollar; Silver Medal, John J. Doyle; Third, R. W. Burke; Honours Certificates, John Robert Beech, Clement Burston, Patrick Dundon, John A. Thompson, William J. Powell, Thomas Wright, William Fairbairn.

Materia Medica and Toxicology—Silver Medal, R. W. Burke; Second, W. W. Dollar; Honours Certificates, J. J. Doyle, William H. Jones, T,

Wright, J. R. Beech, P. Dundon, J. A. Thompson, John Roberts, W. J. Powell.

Botany—Silver Medal, W. W. Dollar ; Second, J. R. Beech ; Honours Certificates, R. W. Burke, W. J. Powell.

Junior Anatomy—Silver Medal, W . W. Dollar ; Second, R. W. Burke ; Honours Certificate, J. J. Doyle.

Practical Histology—Honours Certificates, W. W. Dollar, J. Roberts, R. W. Burke, James George O'Donel.

Best Essay on the Entozoa of Domestic Animals—Silver Medal, R. W. Burke ; Second, Robert Levie.

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on June 17th, and on the 20th and 21st the examinations for the diploma of the Royal College of Veterinary Surgeons were conducted within the museum of the college.

The Board of Examiners included the following gentlemen :—Professor Alexander Crum Brown ; Dr. Andrew Wilson, University, Edinburgh ; Dr. Dunsmure, Edinburgh. The following gentlemen were also present as *ex-officio* members, viz :—Principal M'Call, F.R.C.V.S. ; Professor Knox, M.A., M.B. ; Stephen Cooke, F.C.S. ; and James Macqueen, M.R.C.V.S., Glasgow Veterinary College.

Twenty-six students presented themselves for the first professional examination, and of this number, twenty-three were successful in passing a highly creditable examination ; Messrs. Roberts, Gosling, Rogers, Ebbitt, Hunter, Freeman, Taylor, Robinson, and Watt, passing with great credit.

Medals granted by the Highland and Agricultural Society of Scotland, Principal M'Call, and certificates of merit granted by the college, were awarded in the different branches of study as follows :—

Botany—Gold Medal, Mr. Henry Rogers, Bombay, India ; Silver Medal, Mr. John Taylor, Cathkin. First class certificates—Mr. John Freeman, Dublin ; Mr. Richard Ebbitt, Dunleer, Ireland. Second class certificates, Mr. J. Gosling, London ; Mr. M'Lean, Glasgow ; Mr. R. Roberts, Colwyn, Wales.

Chemistry—Gold Medal, Mr. James Gosling ; Silver Medal, Mr. Henry Rogers. First class certificates, Mr. Richard Ebbitt, Mr. John Freeman, Mr. A. Crichton.

Materia Medica—Gold Medal, Mr. John Freeman ; Silver Medal, Mr. Robert Roberts. First class certificates, Mr, James Gosling, Mr. Henry Rogers, Mr. James Robinson, Bamford. Second class certificates, Mr. John Taylor, Mr. Benjamin Headley, Carlisle ; Mr. Thomas McLay, Glasgow.

At the close of the lectures, on Tuesday, the students assembled in the lecture-room, under the presidency of Principal M'Call, when Mr. Campbell, on behalf of his fellow-students, in a graceful speech, presented Professor Cooke with a handsome silver jug as a mark of their appreciation of his ability and merit as lecturer on chemistry and botany.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Society was held at the Blackfriars Hotel, Manchester, on June 25th. W. Dacre, Esq., President, in the chair. There were present :—Messrs. P. Taylor, T. Taylor, W. A. Taylor, T. Hopkin, E. Faulkner, J. B. Wolstenholme, J. O. Martin, J. Lawson, A. Lawson, of Manchester ; W. Pallin, Esq., 20th Hussars, S. Wilson, Esq., 12th Lancers, Messrs. Hutcheon and Leather, of Liverpool ; A. Darwell, Knutsford ; A. Robinson, of Greenock ; J. Hart, Oldham ; H. Beard, Macclesfield ; H.

Longman, Warrington ; W. Woods, Wigan ; W. Whittle, Worsley ; T. Briggs, Bury ; Dr. Renshaw, Altrincham, and the Secretary.

Letters of excuse were read from Professors Pritchard, McCall, Williams, and Messrs. T. S. Faulkner, C. Challinor, C. W. Elam, W. Thompson, M. E. Naylor, E. Sudren, T. A. Dollar, J. Welsby, and M. J. Roberts.

The SECRETARY also read a letter from Mrs. A. Challinor, thanking the members for their kind address of condolence and sympathy on the death of her husband.

Before commencing business, the President referred to another loss the Society had sustained by the death of one of its earliest members, and he hoped before the close of the meeting some member would propose that a letter of condolence be offered by the Society in the shape of a memorial address.

The SECRETARY nominated for membership, Messrs. G. Humphries, and W. Holland, Manchester ; Mr. J. Leather, sen., Liverpool ; and Mr. H. T. Hodgkinson, Rochdale.

Mr. W. A. TAYLOR then read report of Election Committee :—"The duty I have to perform is short, but in one respect, I am pleased to say, is sweet. Your committee, which was appointed at the last meeting, met on one occasion only ; at that meeting they decided the course they should pursue with reference to bringing about the election of the gentleman nominated by the Society as a member of Council of the Royal College of Veterinary Surgeons. That gentleman is Mr. Whittle, and I am pleased to say the result is that he has been elected a member of that board."

Mr. W. WHITTLE, in response, said that he thanked the members and those who had accorded him their vote for the honour they had conferred upon him.

Mr. PALLIN, 20th Hussars, then brought before the meeting several interesting cases, also showing specimens of same, including a case of Rheumatic Arthritis in a horse, disease of the vertebra, disease of the spleen, Lymph-adenoma, and dislocation of the atlas and dentata, all of which were carefully examined, and a long discussion ensued, in which nearly all members took part. At the close of the meeting, a cordial vote of thanks was accorded Mr. Pallin for his kindness in bringing the above before the members.

Mr. W. DACRE also placed upon the table a morbid specimen of "Diaphragmatic Hernia" of long standing, also rupture of the flexor tendon, with the history of both cases ; these were fully discussed, and the thanks of the meeting were accorded Mr. Dacre.

In the absence of Mr. Sudren, the SECRETARY exhibited a peculiar specimen sent by him, supposed to be an ossified brain of the horse, weighing $4\frac{3}{4}$lbs., and resembling that organ in formation. The history of the case is as follows : On March 2nd a brown gelding, 16-2 in height, was brought to the horse-slaughterers to be slaughtered, he suffering from Elephantiasis and Stringhalt ; he was struck in the ordinary way, with a pole-axe, without any effect for about a dozen times, when the owner (who was present) said they had better "stick it," and that it was always a stupid animal, and did not care for any amount of punishment inflicted by the whip. This fact led to the discovery of the morbid condition, for on looking into the skull the tumour was found surrounded by a limpid fluid. Mr. Sudren did not see the head, so cannot say what amount of brain-substance was left, or the exact position of the bony tumour. After an animated discussion, the members were of opinion that it was not ossification of the brain, but an osseous tumour, which had gradually formed in the cranial cavity.

Mr. W. A. TAYLOR then moved that a letter of condolence be forwarded to Mrs. W. J. Challinor, sympathising with her in the great loss she has sustained by the death of her husband. By his death a gap was created in the ranks of the Society, he being one of the original members. At the commencement of the Society he gave it perhaps more attention than he had

done recently. However, he was a good man, and one who supported our cause on every occasion when he had an opportunity. Mr. JOHN LAWSON very cordially seconded the motion. Mr. W. WHITTLE said he had known Mr. Challinor for the last thirty years, and no one could regret his death more than he did, or sympathise more truly with his widow; he begged to support the motion, which was carried unanimously.

Mr. W. A. Taylor, the President and Secretary, were proposed to draw up the letter. A vote of thanks to the chairman closed the meeting.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting was held at the Queen's Hotel, Leeds, on the 23rd of July, the President, Mr. Peter Walker, in the chair. The following members were also present, viz., Messrs. James Freeman, Naylor, Greaves, J. S. Carter, Cuthbert, Bale, Murdock, Parlane Walker, Lodge, Beeson, Deighton, and the Secretary. Mr. Greenhalgh, student, was present as a visitor. Apologies for non-attendance were received from Messrs. Dray, Danby, Joseph and John Freeman, and Ferguson.

The minutes of the previous meeting were read and confirmed. Mr. John Nettleton, M.R.C.V.S., Northallerton, was nominated for membership.

Mr. GREAVES introduced the subject of a very unfortunate matter now in process of legal dispute. A member of the profession, a very respectable and highly practical man, was being sued for a very large sum of money, nearly £200, for having, as it is alleged, passed a valuable hunter as *sound* in his respiration; whereas, within twelve days afterwards, two veterinary surgeons of eminence had certified the said horse to be *unsound* in his respiration. The affection of the respiratory organs in question he understood to be "Roaring," and he was desirous to know the opinions of the members present as to the causes of "Roaring," and whether this affection could be produced in less than fourteen days without any preliminary symptoms, such as cough, sore throat, or febrile symptoms, etc., etc. He understood that the seller of the horse in question—an officer of the Guards—was not aware that any impediment to respiration was in existence.

Mr. CUTHBERT made a few preliminary observations upon the subject, and then related a case of "Roaring" coming on within fourteen days without any premonitory symptoms.

Mr. PARLANE WALKER said that it occasionally happened that a horse became a "roarer" after a lengthy and severe gallop.

Mr. NAYLOR had known instances of horses becoming suddenly affected with "Roaring" in consequence of some violent collision producing partial paralysis of the recurrent nerve.

Messrs. FREEMAN, CARTER, and the SECRETARY also expressed their opinions that "Roaring" may be produced in a horse in a few days, without any visible premonitory symptoms.

A unanimous expression of opinion was given that the action against the veterinary surgeon in question ought to be defended.

The PRESIDENT gave the history of a diseased ovary in a cow.

Mr. FREEMAN described a case of diseased frontal sinuses in a horse.

Mr. PARLANE WALKER gave the history of some rather obscure symptoms attacking dogs, which he attributed to the affection known as "Dumb-madness."

Mr. NAYLOR was of opinion that the dogs referred to by Mr. Walker were affected with Dumb-madness, and gave the history of some similiar cases, etc., etc. He remembered a mad dog once travelling from seventy to eighty miles away from his own home within twelve hours.

Mr. J. H. FERGUSON, of Leeds, has kindly volunteered to read a paper, "Upon the Present Epidemic of Pig Typhoid in Leeds," at the next meeting.

WM. BROUGHTON, *Hon. Sec.*

Jurisprudence.

SCABIES IN SHEEP.

A QUESTION of great interest, not merely on account of the rank of the person concerned, came on, Monday, June 2nd, before the bench of county magistrates which sits at Walsingham, in Norfolk. The Earl of Leicester, the lord-lieutenant of the county, was summoned by the veterinary inspector of the local authority for the district—first, for causing a sheep affected with Scab to be driven along the highway; secondly, for causing certain "suspected" sheep to be driven along the highway. The defendant pleaded "not guilty," and the case was gone into at great length. The facts appear to be as follows:—It is not questioned but that, in the autumn of last year, Sheep Scab *did* exist on the Earl of Leicester's farm at Holkham. It was duly reported to the local inspector, and a professor (Professor Axe) specially summoned from London confirmed the local authority. On December 24th the flock was again examined, and the London professor this time shook his head, and said, "If Scab at all, it was a very mild form;" whilst Mr. H. Woods, the experienced manager of the Merton flock (Lord Walsingham's), who had been invited to attend, spoke with equal hesitation. On January 28th the local inspector visited again, and said (and this statement again was not challenged) that he found one case of Scab. The shepherd himself a day or so after found two more infected animals; and the whole three were at once slaughtered by the Holkham manager. In the course of the month of February the agent for Lord Leicester (assuming that no Scab existed at Holkham) sold a part of the sheep (the turnips being finished) to a dealer, "to be delivered at the fold." On February 27th the Holkham manager applied to the local inspector for an order of removal for the sheep. He refused, and said that, in the manager's absence on the 25th, he had visited the flock, and found *one* slight case of Scab. The services of a veterinary (himself the local inspector for another district) were called in on March 1st, and he reported (after examining the whole flock) that the sheep were quite free from Scab. He gave the Holkham manager a certificate to this effect; and on March 3rd the dealer's man came to the fold and took away part of the sheep, and the remainder on the 5th. This removal constituted the alleged offence. For Lord Leicester it was contended—First, that the sheep on March 3rd were the property of the dealer, and were moved by him at his own risk; secondly, that after the assurance of the competent authorities consulted in December, and that of the neighbouring veterinary on March 1st, the sheep moved could not properly be described as "suspected" by his lordship or his agents. Indeed, the second charge turned on this—*i.e.*, whether it was necessary to prove that the owner had reason to suspect the presence of disease? or whether the suspicion of the local authority's officer rendered movement illegal? The bench, leaving each party to bear its own costs, dismissed the case. It should also be added that the sheep moved March 3rd and 5th did not, when they reached their new owners, show any sign of Scab, nor have they since shown any.

MALPRAXIS IN CASTRATION.

Aberdeen Sheriff's Court, May 25th.

IN this action, which was at the instance of A. Leslie, of Old Deer, against A. Smith, blacksmith, Hatton, Cruden, and T. Smith, Brunthill, Cruden, Sheriff Smith pronounced an interlocutor, recalling that of Sheriff Thomson. The pursuer sued for £30 as damages in consequence of the defenders

having castrated a colt in such a reckless and careless manner that it died some time after the operation. The defence was a denial of the pursuer's averments. Sheriff Thomson assoilized the defenders with expenses. Sheriff Smith now recalled that interlocutor, and found that the castration was performed with such carelessness that, after much suffering, the colt had to be shot. The Sheriff, therefore, found the defenders liable in damages, and assessed these at £21, for which he discerned with expenses. The following is the note to his lordship's interlocutor :—The defendant, A. Smith, is a blacksmith, forty-six years of age. He served an apprenticeship with his father, who has castrated for sixty years, and for ten years he has been accustomed to perform the operation himself. It is not said to be a difficult operation when reasonable care is taken, and there is no reason to suppose that he does not possess the requisite skill and knowledge of the business for which he held himself out as sufficiently qualified. But on the evidence it is, in the opinion of the Sheriff, impossible to acquit himself of carelessness on the occasion in question. His mistake lay in the manner of adjusting the clams. Professional manuals on the subject point out the importance of taking care that the part to be incised is external to the clams ; but through the neglect of this caution, the penis was cut more than half through. The thing speaks for itself. No instance can be given of such a thing having happened before. Mr. Fowlie never heard of it. Mr. Simpson can see no excuse for it ; and although the defender says it was an accident, he gives no satisfactory explanation why it should be so regarded. It is argued that the pursuer, by employing his own veterinary surgeon, treating the animal for three weeks according to his directions, and shooting it with his own hand without communicating with the defenders, lost any claim he had against them. But it is evident that the serious nature of the injury was not at first suspected, nor a fatal result apprehended ; and if no formal intimation was made to them, they were kept duly informed of the condition of the colt from time to time. The pursuer acted with perfect propriety in calling in the veterinary surgeon of experience the day after the operation. It is abundantly proved that his instructions were carefully carried out, and at the last it surely did not require a sheriff's warrant to end the poor beast's agonies. It may be questioned whether it was lock-jaw or something else which finally set in ; but the evidence sufficiently proves that the loss of this colt was due to the fault or carelessness of the defenders. They are therefore liable in damages, but they have been assessed at a very moderate sum.

Army Veterinary Department.

Gazette, July 22nd.

VETERINARY DEPARTMENT.—Veterinary surgeon Charles Edward Smith resigns his commission : dated July 23rd, 1879.

Gazette, August 14th.

VETERINARY DEPARTMENT.—Inspecting veterinary surgeon B. Channing Rouse Gardiner is placed on retired pay.

We have much pleasure in learning that the Indian Government has sanctioned the sum of 150 rupees per month to veterinary surgeons Poyser and Queripel, as a deputation allowance, and eight annas a mile when travelling by road, three by rail, with five rupees *per diem* when halted, in addition to their ordinary pay and allowances, during the time they are employed under

civil administration and in connection with veterinary sanitary science in the Punjab, especially with reference to the two great roads leading into Afghanistan *via* Jumrood and Thull. In performing their special duties, Poyser and Queripel have materially aided in suppressing Cattle Plague and Foot-and-Mouth Disease among the transport cattle, and so did good service in bringing the campaign in that region to a successful conclusion.

There are rumours of contemplated important modifications and improvements in the Indian Veterinary Department, necessitated by the state of affairs to which we have so frequently called attention.

Parliamentary Intelligence.

House of Commons.—August 7th.

ARMY VETERINARY SURGEONS.

COLONEL ARBUTHNOT asked the Secretary of State for War if he would state the number of veterinary surgeons disqualified as regarded eligibility for promotion to the first-class grade by the operation of the Veterinary Warrant of 1878, and the reason why those veterinary surgeons who had completed the twelve years' qualifying service still remained unpromoted; and whether certain letters and documents complaining of and urging a reconsideration of the warrant, which were received at the War Office prior to the commencement of the present session, had yet been referred to him, and if so, whether he had arrived at any decision on the subject.

Colonel Stanley said he was not at present prepared to give the numbers referred to in the first part of the question, but if the hon. and gallant gentleman would repeat that part of the question at a future date he would endeavour to supply them. With regard to the reconsideration of the warrant, there were certain calculations which would have to be made before he could give a decision on the matter, and, owing to pressure of business, the actuary had not been able to furnish him with the results of those calculations up to the present time.

House of Commons.— August 14th.

LOSS OF CAMELS IN THE AFGHAN WAR.

IN reply to Sir A. Hayter, Mr. E. Stanhope said no telegram containing detailed information respecting the loss of camels during the campaign in Afghanistan had yet reached the India Office, but he was afraid there was no doubt that the loss of camels was heavy.* Nothing in the correspondence from India led to the idea that, "owing to the want of transport, the Kyber force could not have advanced to Cabul if Yakoob Khan had defied us." It was understood that the terms offered to camel owners would cover all risk.

* We have reason to believe that the loss in camels, instead of being 40,000, as we have already mentioned, is likely to be 61,000, an appalling destruction for which there does not appear to be any adequate reason.

Notes and News.

TRICHINOSIS IN AMERICA.—The following extract from the *Rochester Democrat* of May last, will serve as additional evidence to prove that Trichinosis prevails in the United States, and that its existence "has not yet to be determined." "Our readers will be shocked to learn that another clearly identified case of *Trichiniasis* has appeared in the vicinity of Rochester, death resulting from the disease. The circumstances as reported are as follows:—Yesterday morning Dr. J. D. Dunning, of West Webster, came to this city and showed Dr. Porter Farley a portion of muscle taken from the forearm of a lady named Mrs. Hames, who died in that village on Saturday evening last. The lady, the daughter of Mr. Giddings, the well-known constable of Webster, was taken ill at the house of Squire Bancroft in that village. After the first attack she went to the house of her father, where she was attended by Dr. Dunning. The disease appeared mysterious and baffled all remedies administered. A sister of the woman, Mrs. Hetzler, was also taken sick with symptoms somewhat similar in nature. Dr. Dunning did all that he could, but on Saturday Mrs. Hames died. The physician, though unused to the disease, made up his mind that the patient was suffering from *Trichiniasis*, and made his diagnosis accordingly. After death he removed a small portion of the muscles of the forearm, and, as above stated, brought it to Dr. Farley for examination. The investigation proved beyond the shadow of doubt that *trichinæ* existed in countless numbers in the muscles of the deceased. Dr. Dunning is entitled to great credit for his judgment and skill. It is said that a family named Langdon, consisting of Mrs. Langdon, a daughter and two sons, besides Mrs. Hetzler, the lady above mentioned, are now sick with symptoms similar to those of Mrs. Hames.

HIPPOPHAGY IN GERMANY.—In Berlin, as in Paris, hippophagy appears to be on the increase. At the present time as many as twenty horses a day are cut up for food at the Central Horse-Slaughterhouse of the former capital, representing a weight of at least five tons of flesh. Much of this is doubtless consumed as beefsteaks and beef sausages by unsuspecting customers at cook-shops and eating-houses. In every instance, however, it may be relied upon with confidence that this meat, although certainly horseflesh, is perfectly sound and good. No horse may be slaughtered anywhere in Berlin or the neighbourhood except at the central institution named, and any butcher dealing in horseflesh obtained from other sources is liable to such heavy punishment that infringements of the law in this respect are altogether unknown. The work at this central depôt is conducted with every possible care. An inspector and a representative of the police reside upon the premises, and every animal is slaughtered and dressed under the immediate supervision of two veterinary surgeons attached to the establishment. While awaiting its doom each horse is housed and tended with scrupulous care, and when the fatal day arrives no suspicion of "cruelty to animals" attends the accomplishment of its death. The victim is led blindfold into an open space, and killed instantaneously by a skilful blow on the skull from a narrow, sharp-pointed hammer. All the internal organs are then carefully examined by both resident surgeons, and if the slightest trace of disease be detected the carcass is condemned as food. The meat is mostly consumed by the poorer classes of the community, who are thankful to get the sound flesh of a clean-feeding horse at prices within their reach.

SNAKE POISON.—Some interesting observations have recently been made on the poison of serpents by M. Lacerda, in the physiological laboratory of the National Museum at Rio Janiero, which have led him to the conclusion that, in some cases at least, the venom contains an organised ferment pre-

senting some analogies to bacteria. M. Lacerda states that a drop of venom removed from a rattlesnake under the influence of chloroform and examined with the aid of a microscope appears as a "species of filamentous protoplasmic matter, consisting of a cellular aggregation disposed in arborescent form resembling certain lycopods." The development and reproduction of these cells is described in a paper read before the French Academy of Sciences (*Comptes Rendus*, lxxxvii. 1094). Similar phenomena were observed in the blood of animals that had been bitten by the rattlesnake, and it was found that such blood was capable of setting up the change in the blood of other animals when injected hypodermically, and that this change was always followed by the death of the animal.

A Hospital for Aged Animals.—An asylum for aged domesticated animals has just been opened by an inhabitant of Gonesse. There are already a cow 36 years of age, a pig aged 25, and an 18-year-old goat. The senior member of this happy family is, however, a mule. He is 40 years of age. Next comes a sparrow, whose summers number 31. Twenty-eight years of life have been granted to a goldfinch; whilst a guinea-fowl and a goose have respectively reached the age of 12 and 37 years.

The Value of Inoculation for Contagious Pleuro-pneumonia.—In Baarderadeel, in the province of Friesland, three cattle insurance companies were established. The first insisted on the inoculation of all cattle assured in its office, the second required only cattle under three years old to be so treated, and the third rejected inoculation altogether. In the result, the first company had to pay 1.65 per cent. of the sums assured, the second 3.85 per cent., and the third 9.10 per cent., in payment of claims on diseased stock. In those districts of Holland where Pleuro-pneumonia has become more or less enzoötic the calves are inoculated in autumn as a matter of course, and the operation is repeated later in the full-grown stock. In other districts inoculation is only practised when the disease appears in the herd, or is close at hand. The view is generally entertained that inoculation loses its protective power after three or four years.

Rabies Canina in Afghanistan.—A correspondent of the *Army and Navy Gazette*, writing from Kandahar, whither he had accompanied the Afghan expedition, states: "We have had a good deal of Hydrophobia lately, as pariah dogs may be counted by hundreds on the skirts of the camp, and the sudden arrival of summer affected their sanity. Had they kept their 'Rabies' to their own kind it would have been bad enough, but they proceeded to communicate the same to several horses. Col. Hill, Major Chapman, and Captain Gaselee, all lost horses in consequence, also Captain Rogers; while polo ponies to the number of some dozen were bitten."

The Tsetse-fly of Africa.—It has been asserted by many writers that the tsetse-fly is not fatal to donkeys and mules. I know the contrary to be the fact. The fly-country may be penetrated with comparative safety, and trekked across during long and cold winter nights with animals of any kind; but those that get stung invariably die when next they are exposed to a rainy season. Oxen drop off almost immediately after the first rains, as do horses. Mules and donkeys, on the contrary, wither away slowly, their muscles drying up through the effects of the poison until they become mere skeletons, when they fail from exhaustion.—*The Transvaal of To-day.*

A very Old Horse.—In "Notes and News" for last August, we alluded to an American horse thirty-five years of age, and which was then alive. The *Galloway Gazette* for November 10th, 1877, records the death of a mare at an extraordinary age, which is chronicled in the following terms: "Last week we recorded the death of a centenarian, and though we have not such an

extraordinary event to chronicle this week, yet we have to record the demise of certainly the oldest of her tribe in the country. It is no other than the death of 'Irish Molly,' a mare, as her name implies, of Irish extraction, who for the last forty-four years has been in the possession of Messrs. M'Lurg, of Newton-Stewart. This wonderful Bucephalus was imported in the year 1833, and she speedily devoted herself steadily to agricultural work, to the interest and satisfaction of her employers, who were highly pleased with their bargain. For speed and endurance this valuable Irish relic had few equals, and she continued at her post until a year or two ago, when her fidelity was rewarded by a Paradise of ease being provided for her in the Newton-Stewart Market Field. Although of Irish birth she may be considered a naturalized Scottish subject, inasmuch as she has resided here for four-and-forty years. We can also say without exaggeration that she had a large circle of admirers in the agricultural community of the district, and they will be interested to know that this week, 'old and greyheaded,' she has died in her forty-fourth year."

Prevention of Contagious Pleuro-pneumonia in Holland.—One favourite system of guarding against the invasion of the disease is to give each animal, according to weight and age, from 1 lb. to 2 lbs. of Swedish tar, mixed with a handful of salt, at the end of October. The nostrils are also rubbed with the same preparation. If the disease be prevalent in the immediate neighbourhood, half such a dose is given every week ; if the district be free from it, then only once a month. Freshly-bought stock always have a dose immediately on their arrival. Those who have adopted this plan are said to have preserved the health of their cattle, while the herds of neighbours who neglected it were decimated.

The Siberian Animal Plague.—The Siberian Plague (the *Yaswa*, or "Boil Plague"—in reality Anthrax) has appeared amongst animals in the district of Nova-Ladoga, in the government of St. Petersburg, and the prefect of the capital has issued instructions to the house-watchmen to notify all cases of doubtful illness amongst domestic animals ; and has, at the same time, ordered increased police and veterinary supervision. The official report respecting the Plague in Russia during 1877 gives an idea of the extent of epizoötic disease in that year. The statistics show that 212,768 head of cattle and 23,630 horses died of Siberian Plague in the forty governments of Russia during the twelve months.

Evergreens and Farm Stock.—A good deal has been said on the poisonous nature of yew tree clippings, and every now and again we hear of cows or horses being poisoned by munching the branches that have been carelessly thrown in their way. The *Journal of Forestry* points out that the danger is not confined to the yew tree, but that many other evergreens possess the same deadly capability when in a half-withered state. Horses, and even pigs, have been destroyed by eating the clippings of laurel and box trees. Ivy prunings have proved as fatal to sheep, and it is said that fallow deer have occasionally been killed by being permitted to browse on the same plant, which, though apparently wholesome enough when in a fresh growing condition, appears to acquire a deleterious character when it has ceased to grow and becomes shrivelled and dry. Our contemporary has noted fourteen cases that have occurred this spring, and seems inclined to attribute the acquisition of a poisonous character to incipient fermentation. There may be something in this, perhaps, but it seems just possible that the noxious principle is contained in the juices of the living plant, and merely becomes concentrated by the drying of the branches clipped off. It seems certain that animals may eat with apparent impunity not only box and laurel, but the yew tree also when in a growing state, but it may reasonably be doubted whether they do not receive more or less injury from them, and, until the

matter has received a little more attention than it has done, owners of farm stock would do well to look to the fences of their shrubberies and ivy growths. The question is raised as to whether clippings are as deadly at other seasons of the year as they are in spring. This is considered to be doubtful, but it is a fact that animals have been killed by prunings of the kind referred to at all seasons, and care should be taken at all times therefore, although it may be a fact that the poison may be more virulent at one time than another.

Diphtheria Transmission.—M. Trasbot, of the Alfort Veterinary School, has of late made several experiments for the purpose of testing M. Nicati's supposition that the Diphtheria of fowls could be transmitted to human beings. According to the results of these experiments, which he communicated to the Société de Biologie, false membranes, blood, and mucus, which were taken from diphtheritic cocks and hens and applied to the mucous membranes, or introduced into the cellular tissue of several animals, have only given negative results. These experiments are of but little value in the dog, as he is not subject to Diphtheritis, and possesses a remarkable immunity against inoculation; but they have had more effect on the pig, which is more predisposed to pseudo-membraneous affections. When the virus taken from a fowl was inoculated upon another fowl, the result was fatal. M. Faiès, a pupil of M. Trasbot, even went so far as to try the experiment on himself, by keeping in his throat for several minutes shreds of a diphtheritic membrane taken from a cock, and he has remained quite well. It seems, therefore, as if M. Nicati's hypothesis were erroneous.

Epizootic Disease among Wild Elephants in India.—There is an epidemic disease, corresponding to murrain in cattle (Cattle Plague), from which wild and tame elephants suffer at long intervals. It attacked the elephants in the Government stud at Dacca, in Bengal, about thirty years ago, and carried off nearly fifty per cent. of a total of upwards of three hundred. It lasted, with varying virulence, for more than ten years. The animals in best condition suffered most; only two, both in poor condition, are recorded as having recovered after seizure. The symptoms were: breakings-out and gatherings on the throat and legs, spots on the tongue, and running from the eyes. With the cessation of the flow from the eyes the animals died, usually on the second day after attack. In 1862, a similar epidemic carried off large numbers of elephants in the Chittagong forests. A few years later the herds in the Kákankoté jungles in Mysore were attacked; but the mortality was not great, and the disease soon left. On this occasion the fact of the elephants dying was well known to the Kurrabas.—*Thirteen Years among the Wild Beasts of India.*

Trichinosis in France and Italy.—We learn from the *Gazette des Hôpitaux* that Dr. Jollinet, a physician of the department of the Seine et Oise, has met with a number of cases of Trichinosis. Many persons suffered from serious symptoms after eating pork from the same animal. Out of twenty who partook of this food, sixteen were attacked. A portion of the pork was examined microscopically by M. Laboulbène, who had been consulted by Dr. Jollinet, and a number of *trichinæ* were found in it. The pork itself did not present any unusual appearance, not even when examined by a lens. This is the first epidemic of Trichinosis which has been observed in France. Trichinosis appeared for the first time in Italy, at Brescia and Piacenza, in April last.

Trichinæ in American Hams.—According to the *Annales de Méd. Vétérinaire* of Brussels for August, M. Dele, of Antwerp, has been examin ng hams, bacon, and other products of pigs imported from America, and of 277 pieces he found one ham infested with trichinæ.

Correspondence, etc.

THE ROYAL VETERINARY COLLEGE AND "HONEST COMPETITION."

To the Editor of the VETERINARY JOURNAL.

SIR,—The subject of the Royal Veterinary College and its honest (!) competition with metropolitan practitioners, its own students, has been pretty well and fully discussed in your columns—editorially and otherwise ; and the discreditable character of the school competition has been abundantly and conclusively demonstrated. Into this I will not now venture to intrude, but with your permission will direct the attention of the profession to a new move which, in my opinion, and that of others, is equally, if not more discreditable, as it would almost look like an attempt at deception. The agitation against the unfair competition of the College was commenced many months ago, and not long after the school authorities discovered that it was real—indeed, quite recently—a notice was issued by them that "advice gratis" to poor people would be given at Camden Town, medicines only to be paid for. This was with the ostensible object of obtaining that *quantum* of practical knowledge for the students which they never received before, but in reality to throw dust in the eyes of the public, and to try to cover the unpopular subscription competition—which it could not defend on any pretext—by making believe that the agitation was got up against the "advice gratis" system. That I am right in this surmise is proved by the last Annual Report of the College, just issued under the sanction of the Governors, and signed by C. N. Newdegate, who is, I believe, an honourable gentleman and an M.P. In that report, allusion is made to the new farce of sending students to the Deptford and Metropolitan Cattle Markets in search of diseased animals, and then there comes the following, to which I would particularly direct the attention of those who care to watch the course of events in that quarter : "Perhaps the most important feature in this department to which the Governors have to allude is the establishment of a 'Cheap Practice,' which is carried on by the senior students under the supervision of one of the Hospital Professors. The object of the Governors in instituting this system has been solely to afford the students an opportunity of treating patients for various diseases which before was unattainable by them. As will be seen from the Principal's Quarterly Report, a meeting of the profession has been called by circular, which sets forth that 'the system of competition maintained at the Royal Veterinary College, whilst degrading to the profession generally, is very unjust to individual members.' As the Governors' object, however, in this matter is so entirely clear, and as the owners of animals who apply for gratuitous advice and treatment are such as would rarely employ a veterinary surgeon, the Governors feel that no hardship is being done to the profession by the institution of this 'Cheap Practice,' and that it is quite unnecessary for them to take any further notice of the circulars which have been issued."

Now it must be confessed that a more barefaced attempt to mislead was never perpetrated, and we cannot believe that any honourable body of gentlemen could be guilty of knowingly lending themselves to such a deception. The Principal of the school knows full well that the profession justly complains—has complained for very many years—of the subscription system, and that the "Cheap Practice" subterfuge was only devised to conceal the degrading system, or rather to draw away attention from it, long after the present agitation was begun. The metropolitan veterinary surgeons do not object to the Cheap Practice among the animals of poor

people, but they do protest, and will protest yet more energetically, against the system of disgracefully cheap practice among animals belonging to a body of subscribers, not one of whom comes under the designation of poor, but the majority of whom are among the wealthiest in the land. But for the present agitation, "Cheap Practice" for the poor would never have been heard of; and but for the degradingly cheap practice for the rich the school must long ago have succumbed, as it has not produced—and never will produce—a teacher or a teaching staff capable of maintaining a school on its own merits. A school founded on such a system could not exist, would not be allowed to exist, for an hour were it a medical school. It is merely a great co-operative veterinary establishment, where wealthy subscribers, for an annual payment of two guineas, can have about as many hundred pounds' worth of service from practitioners who have themselves assumed the imposing title of "Professor." Of the intrinsic value of these services I say nothing, but from the price set upon it, it is evident the "Professors" do not estimate themselves very highly as men of science.

The report rather contradicts itself, for in another part we read that there has been an annual average increase of seventy-nine in the number of subscribers, and then comes the following: "The Governors are of opinion that, were the advantages and privileges of subscribers more widely known, the number would be very considerably increased, and with this view they have sanctioned the publication of an abstract of the proceedings of their meetings, by which means the College will be brought more prominently before the notice of the public."

Here we have an intimation of further touting—not for poor people to have their animals treated cheaply (we shall hear but little of them), but for rich subscribers to come forward and get advice and doctoring, such as it is, for next to nothing.

I confess to a feeling of sorrow at seeing Mr. Newdegate's name to such a report; I am sure he would be the last man in the country to countenance deception, or to allow himself to be made the victim of a piece of gross chicanery. The device apparent in this report reminds one of the "dodging" that went on when the Governors of the school were induced to apply for a charter of incorporation, which was doubtless intended to place the profession in the hands and at the mercy of the Principal. This species of chicane is certain to be found out. It was in the case of the charter, and it is again in this "Cheap Practice" *ruse*. I would suggest that a circular, pointing out this misrepresentation, and the real grievances of the profession against the Camden Town establishment, be drawn up at the next meeting of the London veterinary surgeons, and freely circulated, one being sent to every Governor and subscriber. Full exposure would soon bring about a change; the public like fair play, not underhand, hole-and-corner dealing, or mean subterfuge. I am, Sir, yours obediently,

August 14th. "A London Practitioner."

MEETING OF LONDON VETERINARY SURGEONS.

To the Editor of the Veterinary Journal.

Dear Sir,—Will you kindly afford me space in your pages to inform thos members of the profession who are interested in the matter, that the nex meeting of veterinary surgeons regarding the competitive fees of the Roya Veterinary College will be held early in October, at "Freemason's Tavern," and that due notice will be given of the day and hour.

I take this opportunity of correcting an error in the report of the last meeting of the council of the R.C.V.S. published in the current number of the

VETERINARY JOURNAL. I am described as "Hon. Sec., *pro tem.*, of a local society;" so far, no "local society" has been formed. I sought permission (by request, and on behalf of a large number of veterinary surgeons) to use the council chamber for *one* meeting—not "meetings." As a future guide, it would be interesting to know on what grounds the application was refused; and why, immediately afterwards, a meeting was allowed on a matter extranaeous to college business. I am, Sir, yours, etc.,

August 16th, 1879. THOMAS MOORE.

A FEW REMARKS UPON THE NEW ARMY WARRANT.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I am very pleased to see that it is under consideration to amend the Warrant for the veterinary department of the army, of May, 1878, and I hope the reply given in the House of Commons may actually mean something, and not be the usual evasive one for the purpose of gaining time. It is certainly not encouraging for junior members, who joined before 1878, to be told they cannot obtain first class until they have served twelve years—a most decided retrograde movement,—whereas those joining after the promulgation of the Warrant enjoy the same privileges regarding promotion, besides drawing a much more handsome salary for ten years. I often wonder if those now joining our ranks consider how *they* shall be treated should another Warrant be necessary at some future time, or how they would like to see a bait worth jumping at held out to young men joining, while they reaped but little benefit; but such has actually been done by the late Warrant. Those already caught benefit little—in some instances extremely little—while young members in civil life are tempted by the good pay offered for their services from the first day. I should like to ask what their prospects are if turned adrift—as all except four in each year must be—after ten years' army life, with £800 in their pockets, and more or less incapacitated for practice in civil life?

Perhaps it does not even occur to them that they are extremely liable to be sent to India, where the new Warrant is so far a dead letter, and where their pay is just the same now that it was fourteen years ago; and where, upon completing five years' service, they shall be treated to the handsome increase of rupees eighteen (18) per mensem. I should say that a goodly number of those gentlemen will be wanted out here, and if they remain five or six years in the country, will not enjoy the good things offered by the Warrant long before Government shall be in a position to dispense with their services, unless they belong to the lucky few selected to remain.

Some may say that Indian pay, rupees 377 per mensem, is not bad for young gentlemen on joining. This I don't dispute; but if it was only good enough fourteen years ago, what should it be called now, especially as the home pay is ever so much increased for the same class of officer? Then the miserable increase after five years service—about the equivalent of one shilling per day—is too distressing to think of.

As to the opinions entertained with regard to the new Warrant, I have sounded both senior and junior men, and all brand it as most unsatisfactory, and very different to what they expected. Now, if the former are dissatisfied, much more should the latter, who profit extremely little by it for at least ten years. Speaking of Indian pay, I may as well mention, for the information of those who know no better, that over and above the above-mentioned sum there is no allowance of any sort or kind—every expense or luxury has to be paid for out of that sum, and in many stations there is a very poor chance

of a young officer doing more than make both ends meet. As far as I can see, most items of expense are increased, especially horse's food, which in some places costs more than eight times as much as it did a few years ago, unless one resorts to an inferior food-stuff. I can actually give an example of the above; and although every place is not so bad, yet from what I know of several others, I should put it down at three to four times what it was two and a half years ago. Climate and everything considered, I am convinced that it does not pay to serve in India if one is at all comfortably off at home. True, there are fortunate ones who get to good stations, and for these it is no doubt pleasant enough; but what are they among so many? Take an example of the unwillingness of senior officers to come to the country, from the list of volunteers for the Afghan campaign. Only *one* expressed a desire for active service; the other two, I am told, remonstrated, but to no purpose, so out they came. One died at Peshawur, before even crossing the frontier; the second became sick at Kohat, and was unable to proceed further; and the third, I believe, found himself told off to do duty with a battery of artillery on his arrival. Are such things encouraging? I say, Most decidedly not. I feel sure there are plenty of senior officers in the country who would have volunteered willingly had there been any extra pay attached to the appointments, and their places in batteries or regiments could have easily been filled by junior men from home; but the authorities not getting satisfactory results from volunteering, had to take the usual steps, and out came two officers, one, if not both, of whom had never been in the country before. Now I leave it to those who know something of India, and the character and language of the natives, to say how useful for executive work a person would be who is perfectly ignorant of all these items; also what endless trouble he would have at every turn, so long as he had anything to do with natives. Had there been a proper system of supervision adopted, under an efficient veterinary staff, the saving in baggage animals, and therefore in money, would have been enormous. As it was, these animals, the very backbone of the various columns, were always over-worked, under-fed, and consequently inefficient. I could add a great deal more, but shall content myself with this for the present. The few defects I have ventured to bring to light are principally intended to meet the eye of the young aspirant in civil life, who would willingly learn a little before he decides for or against the army.

I think if most young men knew as much before joining as they do in the first few years, the number of applicants would sensibly diminish. I know it is extremely difficult to obtain information of any sort or kind respecting the army in most country districts, and indeed at some of the colleges; therefore, with the hope of your finding space for my few remarks in your widely-circulated journal, I have been tempted to pen them.

I am, dear Sir, yours very faithfully,

India, *July 7th*, 1879. "R.H.A."

ANORMAL CONDITIONS OF THE TESTICLE.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Seeing an account in the last issue of the VETERINARY JOURNAL of the communication of Mr. J. R. Dewar, containing a very interesting history of the finding a hair in a serous cyst within the testicle, I thought a few remarks respecting something similar might prove interesting to your readers.

A few years ago, while castrating a yearling colt, as soon as the incision was made for the purpose of operation, a tuft consisting of many hairs was found loose in the scrotum, and escaped with a quantity of serous fluid.

In this case there was nothing abnormal in the testicle, the hairs being quite free from any attachment.

Last year, whilst castrating a yearling colt, I noticed that one of the testicles was hard and enlarged, and on making an incision into it, I found two cysts. These contained what appeared to be cartilaginous tumours, one of the tumours being about the size of a large walnut, and one that of an ordinary nut. The tumours came out of the cysts quite easily, there being apparently no attachment between their walls, and they reminded me of the tumours found in the areolar tissue under the skin of horses.

I did not cut open the tumours but have preserved them intact, so am unable to say of what they are composed, but they are very hard to the touch.

I have also, within the last two years, found three specimens of the *Strongylus armatus* in the scrotum. Two were floating free, and the other had its head imbedded nearly half an inch into the structure of the testicle, which I think must be a very uncommon occurrence. These nematodes were fully 1¼ inches long.

Yours obediently,

Southminster, *August 14th.* WILLIAM A. HURRELL, M.R.C.V.S.

ADDITIONAL REMARKS ON A CASE OF VENTRAL HERNIA.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Having seen a case of the above from the pen of Mr. Queripel, V.S., R.H.A., in your May number, I have pleasure in adding that the horse came under my care, when the hernia was about 3½ inches in diameter. The battery to which it belonged was then on the march, and no steps could be taken so long as the patient was kept moving. However, so soon as our station was reached, I applied biniodide of mercury ointment with very good results, the swelling becoming slowly but gradually smaller, until at last it seemed to come to a standstill. It was not considered advisable to work the patient, therefore it was recommended for casting; but being a young, good-looking animal, the committee, upon the advice of the principal veterinary surgeon, recommended a trial at work. This recommendation was acted upon, and strange to say, the hernia gradually diminished until now scarcely a trace of it remains. The situation was immediately in front of the stifle joint, against the anterior aspect of which rested the posterior part of the hernial pouch or bag. It is now nearly two years since I first saw the horse, and he has never been in the least incommoded by this abnormal state of affairs. I dreaded his return to work, and was agreeably surprised to find he was equal to the task without giving me further trouble.

Now, I think such an occurrence is always worthy of being recorded, for it is seldom one would care to take such a formidable-looking case, as it must have been at first, in hand with any hope of a cure; besides, in my opinion, the situation for such a thing could not well have been worse.

I am, dear Sir, yours faithfully,

S. GILLESPIE, V.S., R.H.A.

Camp Shalofzan, Kurrum Valley, *8th July*, 1879.

P.S.—The hernia could always be reduced with the greatest ease.—S. G.

COMMENTS.

In *The Field* for July 26th, Mr. S. L. Ragg, M.R.C.V.S., publishes a case of Tetanus in which recovery took place, and in which nitrite of amyl was administered. In his letter he states that, so far as he is aware, "no case has been recorded in which lock-jaw has been treated with the nitrite of amyl." A reference to the VETERINARY JOURNAL for June, 1877, will show that Mr. A. Lawson, Manchester, had in February of that year employed this drug successfully in the treatment of Tetanus.

It is satisfactory to note that the Veterinary Department of the Privy Council has corrected the mistake it made in designating Swine Plague "Typhoid," and in a recent order now alludes to it as "Swine Fever." Swine, however, are liable to various fevers, and we are not sure to which of these the order may be applied by inspectors and others. The amendment, nevertheless, must be accepted as a small concession to the requirements of comparative pathology. Meantime, we observe that what the newspapers record as an extraordinary event has occurred in Somersetshire, and which, they assert, "will render an alteration of Privy Council Cattle Disease Orders necessary." This event is the demise, in Somersetshire, of a number of pigs from Pleuro-pneumonia. "As this," they state, "is a disease hitherto unknown in pigs, the Orders in Council make no provisions in reference thereto, and the Department has been written to for instructions, the magistrates possessing no power to order the slaughter of the infected animals." In addition to "Typhoid," "Swine Fever," and the other inappropriate names given to this porcine plague, it appears that it is now cropping into notice as "Pleuro-pneumonia"—a mysterious pig disease! Inspectors should be required to have some knowledge of the pathological anatomy of this grave disorder. As time goes on and the disease extends, we shall learn from experience some of the more obscure characteristics of the scourge, and especially with regard to its contagious properties. In the neighbourhood of Cirencester a serious outbreak occurred a short time ago, at the farm of a Mr. Smith, Chesterton. All Mr. Smith's pigs were bred by himself upon the farm, and therefore there was not the least suspicion of the disease having been communicated from any outward source. The only cause that could be assigned for the outbreak was the following:—About four years ago some of Mr. Smith's pigs were affected with "Typhoid" in the same sty, when the whole of them were slaughtered or died. No measures for disinfecting the sty were then taken, but it remained unoccupied by pigs up to the time of the last outbreak, with one exception, and then it was only tenanted for a short time, and there was a large supply of straw in the sty. The pigs lately affected had no rings in the nose, and having rooted up the floor of the sty considerably, it was thought probable that they may have come in contact with some of the germs of contagion remaining from the former outbreak. Dr. Detmers, who has been studying the Swine Plague by order of the United States Government, says he has abundant proof that the disease is only propagated by contagion; that a hog that has been affected can communicate the disorder, under favourable circumstances, two months after it has apparently recovered; and is inclined to the opinion that no pig can ever again be entirely healthy after having once been diseased.

In the VETERINARY JOURNAL for December, 1878, Mr. Olver, Tamworth, published an interesting case of Hysteria in a thoroughbred pregnant mare. We are now informed that the mare has produced a fine, healthy foal, and that she had not suffered from any subsequent attacks of Hysteria.

In the "Transactions of the Highland and Agricultural Society of Scotland," just published, there is a somewhat detailed historical account of the veterinary department of the Society, which must prove interesting to those who care to study the progress of veterinary medicine in this country. The collapse of the

certificate system is accepted as an unwelcome fact; and it is acknowledged that, "under the circumstances, the Society considered it impossible to continue to grant certificates." It was scarcely to be supposed that matters as they now are could be fairly represented by an intensely patriotic Society, which had striven so hard to split the profession into two inefficient and unfriendly competing sections; and it might have been expected that the long-standing misrepresentation which has been so often offered as a reason for its action would again be brought forward. The expectation is not doomed to disappointment, for in concluding the fully detailed "account," the writer remarks:—"It only remains to be observed that, by the decision of the Privy Council, the monoply of granting veterinary diplomas for all parts of the United Kingdom remains in the hands of the Royal College of Veterinary Surgeons; and that the colleges in Scotland, which have been so productive of good in the past, must henceforth be under the authority of an *English Council*." The *perfervidum Scotorum* could scarcely have carried the writer further in the matter of misrepresentation; for he surely must have been fully cognisant of the fact that the Council of the Royal College is no more an *English* Council than that St. Stephen's contains only an English Parliament. When the representative body of the profession is only an *English* Council, then there can be no doubt that a veterinary charter will be speedily obtained for Scotland.

CORRECTIONS.

The following corrections are requested to be made in Mr. T Hopkin's paper on "Antisepticity":—At p. 38, line 27, for "true" insert "new"; p. 39, line 12, for "clime" insert "clinic"; line 26, for "wine" insert "urine"; p. 40, line 5, for "wine" insert "urine"; line 32, for "nay" insert "hay"; line 34, for "injection" insert "infection"; line 42, after "He says" add "objects"; p. 41, line 28, for "chemical" insert "clinical."

At page 79, line 18, for "epididymus" insert "epididymis."

We regret that pressure on our space compels us to hold over communications from Messrs. F. F. Collins, Nunn, Butters, Miles, F. Smith, Hedley, and others. These will appear in our next issue.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. Smith, Royal Artillery, Woolwich; G. A. Banham, Brown Institution, London; F. Duck, Royal Artillery, Zululand; P. R. Gordon, Brisbane, Queensland; M. Hedley, Dublin; A. H. Santy, Norwich; Professor Walley, Edinburgh; S. Locke, Manchester; "Ignoramus"; F. Miles, Mallow, Ireland; F. F. Collins, Simla, India; W. D. Sartin, Royal Artillery, Woolwich; L. Butters, Norwich; J. A. Nunn, Royal Artillery, Punjab; W. Broughton, Leeds; T. Moore, London; S. Gillespie, Royal Artillery, Kurrum Valley, India; W. A. Hurrell, Southminster; "A London Practitioner."

BOOKS AND PAMPHLETS: *A. Wynter Blyth*, The Composition of Cows' Milk in Health and Disease; *C. J. Eberth*, Die Fötale Rachitis; *F. V. Birch-Hirschfield*, Lehrbuch der Pathologischen Anatomie.

JOURNALS: *Index Medicus; Wochenschrift für Thierhielkunde; National Live Stock Journal; Archives Vétérinaire; Annales de Méd. Vétérinaire; Farmer; Mark Lane Express; Agricultural Gazette; Archiv für Wissenschaft und Practishe Thierheilkunde; Australasian Chemist and Druggist; Lancet; Medical Press; Recueil de Méd. Vétérinaire; L'Echo Vétérinaire; Social Notes; Revue Vétérinaire; American Veterinary Review; Turf, Field, and Farm; Journal of Anatomy and Physiology; Quarterly Journal of Microscopical Science.*

NEWSPAPERS: *Hereford Journal; Scotsman; North British Mail; Melbourne Leader; Australian Sketcher; Dundalk Herald; Freeman's Journal; Galloway Gazette; Albany Cultivator and Country Gentleman; New York Herald.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1879.

AMMONIA, AND THE STIMULATIVE SYSTEM OF TREATMENT IN DISEASE.*

BY PRINCIPAL WALLEY, ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

THE subject of my paper is, "Ammonia: its Uses in Practice; with a Consideration of the Stimulative System of Treatment in Disease."

Thus ammonia is, as it were, my text, and while speaking of this agent it must be understood that I refer to those compounds of ammonia which contain it in a free state, or from which it can be readily formed in the system; mainly I refer, unless otherwise indicated, to liquor ammonia and ammonia carbonate.

First, let us briefly consider the effects of ammonia in overdoses, toxicologically.

(*a.*) If large quantities of free ammonia are inhaled by animal or man, death immediately results, usually from Asphyxia, owing to arrest of the respiratory function—not simply from the fact of its being an irrespirable gas, but by virtue of its inducing sudden paralysis of the brain. If the quantity inhaled is not sufficient to cause death, temporary paralysis and insensibility result. The remote effects of such inhalation may be unimportant; on the contrary, they may be grave, and especially so in animals which respire orally, and in which the mouth happens to be open at the time of inhalation. In this case, the irritant

* Read before the Liverpool Veterinary Medical Association, on August 15th.

effects of the gas may be exerted locally in the mouth, as well as on the Schneiderian membrane ; but, worse than either, it may produce rapid swelling of the epiglottis and death by Asphyxia ; or more remotely, it may cause extensive and fatal Bronchitis, or even Broncho-pneumonia.

If the gas is comparatively diluted, Broncho-nasal Catarrh of a mild type may be the only result.

(*b.*) If strong solution of ammonia is introduced into the mouth and stomach, it produces all the effects of corrosive alkaline agents generally. It destroys the integrity of the buccal, œsophageal, and gastric mucous membranes. That of the mouth, from at first being shrivelled and somewhat blanched, rapidly becoming intensely inflamed—thickened to the extent, in some cases, of half or three-quarters of an inch, of a deep red colour, its epithelium raised in the form of vesicles, and ultimately peeling off in large masses, especially on the application of friction.

The papillæ are intensely injected, the tongue swollen, large quantities of saliva and mucus are thrown out, become ropy, and render the organ very slippery and difficult of retention by the hand.

Frequently the faucial mucous membrane, and that of the epiglottis, is so œdematous as to produce stertor, Dysphagia, and difficult respiration. Violent coughing, ejection of large quantities of bloody saliva and mucus, with vomition (in animals which vomit) are also seen, the vomit usually containing bloody serum and shreds of epithelium.

The condition of the membrane of the mouth is an index to that of the stomach, and, to a less extent, of the œsophagus ; but there is another condition noted in the stomach—viz., that independently of the membrane being softened, the ammonia by its diffusive properties has penetrated the coats of the capillaries and small veins in the immediate vicinity, and caused solution of the hæmato-globulin and destruction of the red cells. After death, too, it has been noted that the blood itself is deficient in coagulable power ; it is not, however, increased in alkalinity, neither is the urine alkaline.

The same effects have been observed in the small intestines,

and that, too, in a somewhat modified degree, when ammonia has been injected into the peritoneal cavity.

Enteralgia, rapid breathing, and gradual failure of the pulse are also accompaniments of ammonia-poisoning.

(*c.*) If strong ammonia is injected into the veins, we have, as its *immediate* effect, sudden convulsions, complete loss of voluntary power, paralysis, stertorous breathing, and dilatation of the pupils. If the quantity has been large, death quickly follows; otherwise the animal, after lying perfectly still or somewhat convulsed for about twenty minutes or half an hour, regains consciousness and sensibility, rises without any confusion of intellect, and seeks for food.

Its remote effects are due to the powerful solvent action it exerts on the blood, and to the lowering of the density of that fluid; and probably, in some degree, to interference with the integrity of the blood-vessels: the remote effects are systemic hæmorrhages and effusions, Hæmaturia, and Diarrhœa. If the integrity of the blood has been too far interfered with, the animal ultimately dies from Anæmia.

Physiologically, ammonia acts as a powerful stimulant, but does not, like alcohol, increase mental activity, nor does it to the same extent increase the force of the circulation. In man it is found to impart a feeling of greater strength, with a sensation of warmth in the epigastrium, and of the system generally, with increased renal and cutaneous elimination. Its action as a stimulant—owing to its being so quickly expelled by the various excretory channels—is as fugitive as it is rapid, but it does not produce so much secondary depression as alcohol.

Its elimination by the skin and lungs has been pointed out by Dr. Richardson, who tells us that in the case of fellmongers, who are constantly inhaling ammonia, a powerful ammoniacal odour is exhaled from the body, and that ammonia in small quantities can always be detected in the expired air.

Whether ammonia be given experimentally or therapeutically for any length of time, it induces catarrh of the intestines, and, as a result of this, Diarrhœa.

Ammonia is not only a general stimulant in health, it is more powerfully so in disease, and, in addition, it is a special respira-

tory and cardiac stimulant—acting probably on the respiratory and cardiac centres in the brain, in addition to the nerve ganglia of the lungs and heart respectively.

It is, too, a powerful stimulant to all the glands of the body, as well as to the mucous glands generally, acting upon the mucous membrane of the alimentary tract, upon the kidneys, the skin, and the liver. Its action upon the liver appears to me to have been but very slightly, if at all, recognised by therapeutists.

Its effects as a general gland stimulant are well seen in those cases where the pulse is firm, the skin dry, the kidneys inactive, the mucous membranes icteric, the bowels sluggish, and the fæces coated with mucus, with a hot, dry, and furred condition of the mouth. A few full doses of ammonia here will, by stimulating gland function, rapidly alter these conditions. In the stomach and intestines ammonia acts as an antacid and as an anti-tympanitic. It is a powerful antiseptic, both externally and internally, and will preserve freshly-drawn blood for an indefinite period.

It is, both by digestion and inhalation, an anti-spasmodic, and indirectly an anodyne.

It is a solvent, and destroys or neutralizes, physiologically or chemically, animal vires, and counteracts the lowering effects of sedative poisons. It, indirectly, lowers temperature.

Having glanced at the general effects of ammonia on the system, let us see to what purposes we can apply it in practice, and with what other therapeutic agents we can advantageously combine it.

As a general and gland stimulant, it is indicated in all conditions, febrile or otherwise, of the system in which the vital powers are at a low ebb. It is invaluable in almost every form of Influenza; in collapse, whether resulting from loss of blood exhaustion, parturition, prolonged and inordinate excitement exposure, drowning, poisoning, shock, lightning, effects of fire sedative or narcotic medicines.

As it does not act as a food (though restorative in a sense), it should, for the purposes above mentioned, be combined with alcohol and other easily assimilable and nutritive materials, and being transient in its effect, should be repeated with tolerable frequency.

It is useful in acute or sub-acute indigestion in horses or cattle, when purgatives fail to act, and the animal shows signs of exhaustion, alternated with strychnine or nux vomica ; or, if there is much pain, combined with opium.

In the early stages of tympany, the liquor or the carbonate unite with the liberated carbonic acid and fix it, and in any stage are beneficial by stimulating the mucous membrane to increased activity, by rousing the nervous energy, and by arresting and preventing decomposition.

In indigestion, with acidity and Diarrhœa, it acts as an antacid as well as an anti-tympanitic and gastric stimulant, and, for these reasons, it has been particularly recommended by the late Mr. Aitken, of Kilmarnock, and by Mr. Steel, of Biggar, in that form of indigestion known as White Skit or White Scour in calves.

In all fevers it may be combined or alternated with potassic chlorate, nitrate, or sulphate, or with magnesium sulphate; and in those fevers accompanied by great exaltation of the circulation and of the temperature, aconite may be employed with ammonia with the best results. If the carbonate is used in the form of bolus, the tincture may be dropped into the ball ; if in solution, it should be either alternated with the ammonia or given in the drinking water : on no account should it be given with ammonia in the form of draught.

Where there is a tendency to malignancy or putrefaction—as in Distemper in the dog, and some of the forms of fever occasionally met with in the horse—and in all septic blood affections, ammonia should be combined with camphor, quinine, or cinchona, in addition to potassic chlorate, or alternated with the sulphites ; and where the respiratory or cardiac centres are failing, with it nux vomica and alcohol ; or, when the cardiac centre is more particularly involved, with digitalis.

With alcohol and spt. ether nit., it is invaluable in the earlier stage of Pleurisy (in cattle I have even combined it with turpentine), and in the later stages, when effusion is threatened or the pulse and respiration are failing, also with alcohol and, in addition, potassic iodide. With the latter agent it is also extremely useful, when effusion is an accomplished fact (not only

in effusion into the thorax, but into the pericardial and abdominal cavities); and it enhances its action to a degree that would scarcely be credited by those who have not employed it for this purpose.

As it is invaluable in the early or congestive stages of Pleurisy, so also in Pneumonia, and in its exudative stage, particularly in septic, metastatic and asthenic forms generally. In Bronchitis, as an expectorant and respiratory stimulant, it is particularly indicated in low forms of the disease, when the mucous secretion is suppressed and when the respiratory function is languid or shows signs of exhaustion; and in the last stages of all forms of the disease it may be combined here with ipecachuana, alcohol, camphor, and other agents, as circumstances demand.

In practice, especially in large towns, we meet with a class of cases to which no other designation than *Congestive Fever* (the one I have usually given it) so aptly applies—a condition marked by great excitement or, indifferently, prostration; by an oppressive or hard pulse, hurried respiration, unequal external and somewhat elevated internal temperature; injected or yellow mucous membranes, torpid bowels, scanty urine; uneasiness, as expressed by constantly shifting the legs, occasionally pawing, and oftentimes colicy pains; perspiration, shivering, and muscular twitchings: a condition of system, in fact, of the terminations of which the practitioner is for a time ignorant, and for which he must be carefully and anxiously on the watch—it may be Laminitis, Pulmonary Congestion, Acute Œdema, Uræmia, Enteritis. Under such circumstances, I say ammonia, in bold doses, with external stimulants and other adjuvants, is particularly valuable.

Ammonia is, *par excellence*, the agent upon which we can rely in our combats with *ante-mortem* cardiac clotting and systemic thrombosis. I will not go so far as Dr. Richardson, and say that ammonia will disperse clots when they are thoroughly formed; but I will say that no other agent possesses the same power of preventing the formation of thrombi, or, when formed, in assisting in their subsequent liquefaction. I certainly think that if there is any condition of the system in which the intra-venous injection of ammonia is warranted, and likely to be of use, it is this.

In the treatment of all the Urticarious, Purpuric, and Anthracoid Blood Diseases, ammonia is of especial value. Often, indeed—notably in Blain in the ox—one or two bold doses at the outset being all that is required for the restoration of health.

My *penchant* for this drug, as a stimulant in the treatment of Parturient Congestive Fever in the cow, is, I imagine, well known to most of you through the medium of the paper which I read before the Scottish Metropolitan Association in 1872.

As I maintained then, so I hold now, that there is no therapeutic agent which we can administer with so much hope of success in the treatment of this disease as ammonia: assisting us, as it does most powerfully, by its solvent effects on the blood, and by its stimulating effects on the glands and upon the respiratory centre. It is, with appropriate adjuvants, admirably calculated to tide our patient over the most critical period (Apnœa and suspension of the organic functions) of the disease; and this, quite independently of any particular view which may be held as to its pathology.

While referring to this disease I may be permitted to protest against the way in which some writers have, as it were, bound me down to one particular view of its causation. When alluding to the influence of the anatomical distribution of the cerebral blood-vessels as a predisposing cause of Parturient Congestive Fever in the cow, I did not thereby imply that this was the actual cause of the affection in this animal, but only a predisposing, and, in one sense, a secondary cause.

So far as we know at present, it is rather due, primarily at least, to some depressant influence exerted on the organic, rather than on the cerebro-spinal system of nerves, and to this view of its nature I gave great prominence in the paper to which I have before referred.

Another idea in connection with its causation has of late occupied a large share of my thoughts, viz., that it is somewhat allied to acute Uræmia in the horse, *i.e.*, due to the accumulation (from a superabundant supply) of nitrogenous and carbonaceous elements or compounds derived from them in the blood. This idea I entertained and expressed in 1872, but it has of late gained a firmer hold upon my mind. In seeking to fathom its

etiology, we should not confound parturient convulsions (from Anæmia of the brain) with parturient cerebral congestion or Apoplexy, and we should further remember that its causes may be diverse and complex.

There is another disease—viz., Acute Uræmia, so called Azoturia—in the horse, in the treatment of which ammonia, as an organic stimulant, is of great service. In Uræmia we have a disease in which oxidation compounds, in the first instance, collect in superabundant quantities in the blood; and in which the glands, the liver, and kidneys, more than any other, are, in the second place, incapable from functional derangement, or rather exhaustion of their cells, of elaborating the various constituents which go to form Uric and Hippuric compounds, or of eliminating them when formed. And surely those agents which will assist and hasten the elaboration and elimination of these compounds, and at the same time strengthen the nervous system—particularly the ganglionic—under the balefully depressing influence to which it is exposed, must be of more real value than the use of depressing agents such as colchicum or nitrate of potash.

Ammonia has been condemned in the treatment of this affection, because it is thought that ammoniacal compounds, or others closely allied to them, already existed in the blood to too great an extent, and that ammonia carbonate, being formed from the decomposition of the urine in the bladder, is re-absorbed into the blood, and produces some of the phenomena which we are accustomed to see in this disease.

Granted that ammonia carbonate may be so formed and so re-absorbed, it is only in very rare cases that it is a primary cause of the malady, though it may be a secondary cause, when the urine is allowed to lie in the bladder for too long a period.

All our knowledge of the nature of Uræmia points at present to the use of agents which will stimulate the liver, the skin, bowels, and kidneys to the more perfect performance of their varied functions, and which will, at the same time, support and stimulate the nerve centres under the depressing influences to which they are exposed.

Ammonia, as an expectorant, may be combined with squills,

ipecachuana, etc., in coughs, especially if there is accompanying depression or dysorexia; or with potassium bromide, or camphor mono-bromide, where the cough is of a violently spasmodic character.

Inhalation of ammonia is of much use in catarrhal affections, in nervous depression, Syncope, Apoplexy; poisoning by prussic acid, chloroform, and allied agents. And it has been asserted by Dr. Gaillard, that it may be used in conjunction with, and to guard against the depressing action of chloroform.

Ammonia ought to be used much more largely than it at present is, by means of *intra-venous injection*. It has been so employed by various therapeutists for different purposes, and with the best results. I have already said that its use in this way is indicated in intra-venous and cardiac clotting. To all I would say, give it a trial, as opportunity offers, in nearly every form of collapse, in blood-poisoning, in poisoning by sedative agents and foul gases; and, above all, in Parturient Apoplexy.

It is easily introduced into the veins, by the aid of the subcutaneous injection syringe, the only precaution necessary being to guard against its passing into the surrounding tissues.

In the ox and sheep, *Gastric injection—i.e.*, passing ammonia solution by the aid of the trocar and canula into the rumen—should be always had recourse to in cases where fluids cannot be administered by the mouth, or there is danger in so doing, and where Dysphagia exists.

STIMULATION.

Now I feel quite prepared to hear some of you say that I have been too laudatory of the virtues of ammonia, in the remarks which I have just made. But I will say still further, while I do not hold it up as a universal panacea, that were I reduced to the choice of employing only one agent in my daily combat with disease, that agent would be ammonia; for there is no drug in the Pharmacopæia so potent for good when judiciously used.

In concluding my subject, I will apply the remarks I have made on ammonia to the stimulative system in the treatment of disease generally.

At different periods, in all ages, the minds of men (alike in

medicine as in other professions) have glided insensibly into two opposite extremes—extremes the very antipodes of each other, and only to be explained by some influence acting *violently* on the mind—such as the abuse of a particular system or one acting *more gradually;* such as the neglect, for a period more or less prolonged, of a particular system or method. We see this exemplified in the marked disuse, and in some instances total abolition of venesection—a remedial measure which, when intelligently applied and assisted, is often of the greatest use. We see it still more exemplified in the disuse of not only internal but external stimulation, and that mainly owing to the way in which the use of venesection and stimulants have been abused.

In practice—especially in large towns, where horses are subjected to severe and prolonged exertions (sometimes by night as well as by day), and not infrequently fed upon materials such as Indian corn, foreign hay, and light oats, which are totally incapable of repairing the waste of nitrogenous elements constantly going on; or, on the contrary, fed upon materials so rich in their nature as to load the system with a superabundance of nutrient elements and to render it impossible for the gland cells to elaborate or the tissues to assimilate it—the axiom laid down by me in my essay on the "Action of Medicines," read at Manchester in 1871, viz., the "Conservation of Vital Force," must ever be acted on if we would do our best for our patients and our clients.

The systems of animals—unlike those, unfortunately, of many men and women—are not saturated, nor their nervous energies blunted, by the habitual use of alcohol; consequently in administering it we are really having recourse to a medicament as much as though we gave arsenic, phosphorus, or any other powerful drug.

The value of the stimulative over the depressant, or over the *do-nothing* system of treatment, was never more forcibly impressed on my mind than it was, many years ago, by a remark which fell from the lips of our late lamented friend Gilbert Heyes. When in consultation with him one day on a severe case of Catarrhal Influenza, he said, "We cannot afford to knock our patients down in town practice: the time of a horse is money

to his owner, and it is our function to keep up his strength, so as to enable him to return to his work as quickly as possible."

Largely as I had employed alcohol and ammonia previously, I gave them to a much greater extent subsequently to the above-quoted conversation; and after many opportunities of watching different systems of treatment since that time, I have not yet seen the truth of the remark disproved, but quite the contrary, though in horse practice it will apply more strongly to the town than the country, as in the latter, animals exist under much more natural conditions.

It is in the abuse of the stimulative system of treatment, or in its application under wrong conditions, that errors arise and that harm is done.

A powerful and prolonged vesicatory or suppurative action will irritate, weaken, and depress, where a sharp stimulant (a flying blister), judiciously repeated, will rouse the nervous energy, give a fillip to the circulation, and stimulate the nutritive functions of a part or organ.

The administration of a large dose of whisky or ammonia just at the critical moment when the balance is suspended between organic derangement or organic disease, or between exhaustion and recuperation, will often turn the scale in our patient's favour.

Instance a case of Pleurisy or pulmonary congestion in its early stage. How often do we see it checked by the application of a sharp stimulant to the sides and legs, and the administration of a few bold doses of ammonia and alcohol; or, as we are sometimes tempted to do—taking a physical view of the condition of the circulation—by administering a bold stimulant, abstracting a moderate quantity of blood, and applying a sharp irritant to the sides.

Instance, again, a case of Pleurisy or Pneumonia which has been hanging on for days, and we are hourly expecting effusion in the one case, death from exhaustion or Asphyxia, or breaking up of the lung tissue, in the other. How often have I seen similar treatment (aye, even the insertion of a seton or rowel in Pleurisy) produce remarkably good, almost magical results.

In the use of stimulants, some practitioners are apt to imagine

that a bold dose at long intervals is all that is required. Herein lies one of the greatest errors connected with this system of treatment.

Take a case of Parturient Collapse in a cow, demanding a strong dose of ammonia and alcohol every twenty or thirty minutes, until reaction sets in, and content yourself with giving one large single dose and leaving your patient to her fate. You will find that you have aroused a temporary and evanescent flickering of vital flame, which will be all the more fatal for the sudden reversion to the condition of depression and exhaustion which existed previously.

The fable of the hermit with his "elixir of life" aptly illustrates this proposition. His first dose roused the dying man and restored warmth to his limbs, the second dose induced a return of consciousness, the third was accidentally spilt on the earth, and the lamp of light went out for want of further sustenance.

Another great mistake which is often made in the use of stimulants, is the sudden withdrawal of them after a patient shows signs of rallying, instead of gradually and judiciously reducing or increasing the interval between the administration of the doses; and still another mistake is perpetrated in not remembering that ammonia is not a food, and that while alcohol reduces the oxidation of the tissues and lowers temperature, it stimulates the digestive functions, and requires, for the due reaping of its beneficial effects, to be combined with food easy of digestion and assimilation.

Lastly, to be of service in debilitating fevers, the use of stimulants should not be delayed too long, especially when there is a tendency to emaciation, exhaustion, congestion, or depression of the heart's action.

In penning the foregoing remarks, particularly, I have had one object in view, viz., to impress upon your minds the great benefit which may be derived from the judicious employment of an agent which is too frequently neglected, or the usefulness of which is too little known and appreciated.

I have never yet seen a single instance in which ammonia carbonate has been brought prominently before the notice of a

practitioner, that it has not become a permanent tenant in his pharmacy, and not only a permanent, but a highly-valued one.

It may be urged by some, that if its action is to render the fluidity of the blood more pronounced, it must be injurious. In answer to such a remark, I have only to say that during its administration it is an easy matter to extract a small quantity of blood from an animal, and test its coagulability by exposure to the atmosphere. And it would have to be given in very large quantities before it would produce any pronouncedly injurious effect upon the blood. The liability of ammonia carbonate to produce intestinal catarrh when given in large doses, may also be urged against it as a therapeutic agent in Influenzas. But in all such cases, in my experience, the intestinal flux has been premonitory to a rapid convalescence.

I have not entered fully into the matter of stimulation, preferring rather to string together a few hints which may form texts for a good and profitable discussion.

SUGGESTIONS ON THE DIAGNOSIS OF GLANDERS AND OZŒNA, FARCY AND PYÆMIA.

BY ROBERT WARD, F.R.C.V.S., LONDON.

THE diagnosis of the above diseases is a subject that should receive grave consideration by members of the profession at the present time, for the recent exhibition of diversity of opinion by veterinary surgeons on this subject has attracted considerable attention, tending to leave impressions of our incompetency to diagnose that terror to the public, Glanders and Farcy.

It will be doubtless fresh in the minds of most of the readers of the Journal, that a short time since, a mare belonging to Mr. Clark, of Islington, which had been sold at a Repository with many others from his stud, had been condemned by one of the Privy Council veterinary inspectors as Glandered; the animal had reached the horse-slaughterer's premises, when the former owner arrived with his veterinary surgeon, Mr. Priestman, who at once declared the animal was not so affected. Prof. Pritchard

was called in, and corroborated the opinion of the latter. The animal was removed, placed under treatment, and soon recovered; and further, we are told by Mr. Clark, is now working.

There is no need to dwell on the importance of this case.

Another case occurred at Bow. A gentleman having one of his horses out of sorts, sent for a member of the profession, who treated the animal for about eighteen days, and then discovering the case to be one of Glanders, informed the owner, and advised its immediate slaughter. The owner sent the animal away for that purpose, but, in his ignorance of the law, omitted to inform the police, he was summoned for moving, etc., and fined £10 and costs. Now the question arises in this case, If the animal was suffering from Glanders on the eighteenth day, how came it that the disease was not diagnosed early—if not on the first day?

Last year I was requested to inspect a stud of horses, and discovered two affected with Farcy, which the veterinary surgeon attending had designated Pyæmia. It so happened the same afternoon that Mr. Fleming paid me a visit. I asked him to accompany me to inspect these patients, and he did so, recognising the cases at once as Farcy. In the evening the Privy Council inspector condemned them as very bad cases. In the course of a few months several others died or were destroyed, suffering from both Glanders and Farcy. To close the sequel, the attendant became affected with Farcy, was placed under most skilful treatment for some months, and, I am glad to say, has recovered and resumed his duties.

The whole of the stabling has been reconstructed, drained and ventilated—all old woodwork, etc., replaced by new, a new stud purchased, and now we have no more "Pyæmia," Glanders or Farcy.

A short time since, my opinion was sought on a case of reported "Ozœna." On close inspection I assured the owner that it was a very bad case of "Ozœna"—*i.e.*, one of Chronic Glanders.

In 1852, I remember, my father purchased a brown mare at the Repository in Little Britain, City. The animal was discovered to be "running at the nose" the next day, and to be "jugged." The attending veterinary surgeon reported it to be

"Ozœna." She was placed under treatment, although I demurred; eventually she showed evidence, "unmistakably," of Glanders, and was destroyed, leaving much annoyance behind her.

In 1854, during my pupilage in Ireland, I remember going a journey to see two horses reported to be suffering from Nasal Gleet. Upon my arrival, I was informed the groom was ill in bed in a room over the stables, with the same "sort of thing," by his poor old father, who was doing the son's work. I examined the patients and found one suffering from Farcy, the other from Glanders. I informed the owner as to my opinion, and rode home to report the result to my employer. Next morning, early, we visited the patients and had them both destroyed and buried. I regret to say the young man died shortly afterwards. The experience of the case in 1852 led me to diagnose these cases.

In August, 1857, I visited a farm in Hertfordshire, to inspect a stud of cart-horses reported to be suffering from "Nasal Gleet." These I found to be affected with Chronic Glanders, and although one or two had died, the real state of affairs was not discovered; and even when I explained the nature of the disease, it was not accepted until the late Mr. Foalkes, of Bishop Stortford, was called in, who at once condemned them.

In 1861-2 I had charge of a large stud of omnibus horses in the north of England, and saw a vast amount of this "Pyæmia" and "Ozœna," and with all my persuasive eloquence I could never convince the manager that it was better known under its real names of Glanders and Farcy. I found the stud thoroughly impregnated with this disease, scores of horses dying from Glanders in its acute form, others with both Glanders and Farcy combined; and yet I never convinced this gentleman as to the nature of the maladies, although a mare he himself worked, and one I also employed became inoculated and had to be destroyed, and even a man or two sickened and died from this direful plague.

It took me nearly two years—at least eighteen months—to stamp out this disease from among these horses; and this, after hard and anxious work, with every assistance from the directors, I had the satisfaction of seeing accomplished.

I have selected these important cases from my note-book, and

entered into these preliminary observations with the view of impressing upon our younger members the necessity for most careful observation, investigation, and the great advantage of an extensive clinical course of study; for errors in diagnosis of these direful maladies may blight their professional career at its very commencement.

In my next paper I will offer such notes and remarks on the above diseases as may occur to me, and which I may think of interest; and although, perhaps, I may not be able to furnish anything new, nevertheless I trust it may prove an incentive to thought and study on the part of the juniors, and stimulate the older practitioners, who may be better able, but not more willing than myself, to pen valuable suggestions and advice of paramount importance to the new men, being the result of research in the broad and proper field of actual practice.

THE PRINCIPAL FACTS HITHERTO ASCERTAINED CONCERNING BACTERIA.

BY J. H. STEEL, M.R.C.V.S., ROYAL VETERINARY COLLEGE.

(*Continued from page* 174.)

THE *Ascococcus* of Bilroth, *Cohn* considers as of two distinct forms. One of these he terms *A. Billrothii.* It is an extremely small spherical Bacterium; numbers become united together to form lobed masses, surrounded by a gelatinous or even cartilaginous envelope. They increase and form a creamy scum, with an odour like lactic acid and ether. It may be obtained from water containing decomposing muscle, or hydrocele fluid; is grey or greenish grey, knobbed or cylindrical. The scum which it forms is five mm. in thickness, and finally sinks. It results from the palmelloid form (Billroth). If embedded in *Coccoglia,* ascococcus forms spheres or cylinders of micrococci united into colonies, and tied together by a remarkably fine *glia.** No membrane can be observed around this: several large cells form, by transverse division, long cylindrical spiral tubes, in which appear chains of cocci by longitudinal division and branching; these

* Cohn's *Beitrage Zur Biologie des Pflauzen.*

repeated branchings produce very small (micro) cocci. When this has gone on for some time, micrococci escape by bursting of one side, and the envelope which is left is seen to have a double contour, and is easily recognizable by its greenish-brown colour.*

Two forms which have been carefully investigated by able workers will now be somewhat at length treated of, as from examination of these important deductions have been drawn.

Bacterium lactis (Lister).† Nearly all forms of Bacteria will thrive in milk, but there is one which occurs only in connection with unsterilized milk, and is especially prevalent in dairies. Thus, though boiled milk will putrefy, it will not undergo those changes which constitute lactic fermentation. It must receive the germ, *B. lactis*, from without, or this change will not occur. This organism is motionless, and $\frac{1}{20000}$ of an inch in length. It occurs mostly in pairs or groups of three or four, and cannot develop in Pasteur's solution, and is dwarfed in urine. The sour odour of fermenting milk probably depends upon an ether given off. Since this Bacterium is always present when lactic fermentation occurs, and v.v., it is considered the cause of this phenomenon. In the course of his investigations of the organisms which occur in milk, Lister has observed a hyphomycetous fungus, which he has named *Dematium fuscisporum*. You will see this in the accompanying diagram as copied from his paper, and may observe delineated the three processes of reproduction which Lister attributes to it. The thread-like hyplæ, produced by modification of the spores, he believes he has shown to become Bacteria.‡ He hesitates before applying this theory of origin from fungi to all Bacteria. He has cultivated the Bacterium which thus arises, and finds that in various media of growth it undergoes changes in size and motility, while he mentions *branching*, a property denied by all other observers to Bacteria. In the case of another milk Bacterium, which gives rise to viscosity, he remarks the peculiar differences in appear-

* Billroth. *Von Coccobacteria septica.*

† See *Transactions of the Pathological Society*, 1878; also *Medical Examiner*, 1878, p. 14.

‡ *Quart. Jnl. Mic. Sc.* New Series, vol. xiii., p. 380, *et seq.*

ance between the ends and the middle portion of the plastids; he has noted, too, its Zooglea stage. His observations seem to indicate transitions between the Leptothrix and Spirillum phases of another milk Bacterium, and he mentions a remarkable pigment-producing property manifested by *B. lactis* when placed under certain experimental conditions. But there are true chromogenous Bacteria, one of the most remarkable of which is *Micrococcus æruginosum*, which gives to pus that bluish colour which it sometimes presents. Sanderson tells us that some coloured Bacteria are highly virulent, and we are told of miraculous cases of appearance of blood on bread, which is really due to the rapid development of a maroon-coloured Bacterium. Bacteria may appropriate colour from without, may manufacture colour and throw it off, or may manufacture it for their own use. A form exhibiting the latter property is *Bacterium rubescens*, named, figured, and investigated by *Professor E. Ray Lankester.** He considers Bacterio-purpurin a colouring matter distinctive of this form-species, by which it can be recognized. By carefully observing the presence of this he has determined that this species may assume sphærous, bacterioid, filamentous, and acicular forms. And the individual plastids (cells) may become aggregated in linear, stellate, globose, massive, arborescent, reticular, and tesselate modes. Around these aggregations and free plastids he almost invariably finds gelatinous matter which may bind them together, constituting the "Zooglea State." Sometimes, however, the plastids are naked. He determines that in the transparent portion of the Bacterium, circumscribed masses of coloured matter may be present, constituting the loculated condition; and shows us that a filamentous transparent (acicular) organism, with many loculi close together, really is a "Leptothrix," but the transparent matter is not dead, for it exhibits movements apparently of a spontaneous nature. Dr. Klein observed a red spirillum, which Lankester considers simply a phase of *B. rubescens*. In his last observations on the subject, he notes the occurrence of large discoidal forms (macroplasts), which attain a diameter of as much as $\frac{1}{150}$

* *Quart. Jnl. Mic. Sc.* New Series. Vol. xiii., p. 409, 1873, and vol. xvi., p. 27, 1876.

in., presenting a marked contrast to the minute termo-like forms $\frac{1}{20000}$ in. long, which occurred in a macerating tub. The acicular, leptothrix, and bacterioid forms exhibited movements: slow in the leptothrix, active and darting in the other forms. Also a mycoderma or pellicle form was determined, though Cohn had described it as a distinct organism under the term *Clathrocystis rubeo-persicus*. A remarkable tesselated form of aggregation of the plastids of extreme regularity recalls the general appearance of *Sarcina ventriculi* (Goodsir). *Ophidomonas sanguinea*, (Ehrenberg), described by Klein, is probably a ciliated monad form-phase of *B. rubescens*. The cilium has not been observed, but agitation of the fluid behind by it has been noted.*

This species occurs in a decomposing solution of animal and vegetable matter, such as lichens and infusoria. Light seems to favour its development, but not to be essential. It throve in distilled water. Its colour varied considerably, but in all cases was due to the Bacterio-purpurin. Phyllocyanin is absent.

By some botanists these coloured organisms are classified under the division "Chroococcaceæ" of the Algæ; but Lankester considers them Bacteria, since they take the biscuit-shaped form, exhibit motile stages, and contain no chlorophyll; also the vegetative processes of growth in the two (*B. rubescens* and *B. termo*) are similar. True Chroococcaceæ, too, never assume the filamentous form, in consequence of union of their cells in a linear manner.†

It must be noted, too, that by some the term Bacterium is considered to include the several form-phases of the single species, whereas others speak of the single rod-like phase as the Bacterial. This difference tends somewhat to confusion. Throughout this paper it will be observed we speak of all forms as Bacteria.

We must next examine the position which Bacteria must occupy among living organisms, from a biological point of view. When they were first discovered, these rod-like bodies were thought simply to be complex crystals of organic compounds;

* *Quart. Jnl. Mic. Sc.*, October, 1875.
† Sach's *Text Book of Botany* (Eng. trans.), p. 214.

but few will now hold this view, though Dr. Hartz, of Munich, in 1877, considered them inorganic.*

They appear, grow, develop, reproduce, and die, and, in fact, manifest *all* the signs of vitality. It being therefore allowed that they are organic, we have to inquire to which kingdom they belong—whether the animal or the vegetable. Ten years ago they were unanimously considered Infusorians by all who admitted their organic nature, the opinion being based upon their apparently voluntary motion, their general appearance, and the presence of flagella or whiplike processes of locomotion. Soon it was determined that they are totally devoid of mouth and certain differentiations of structure, such as belong to Infusoria; they were then degraded to the monads—Rhizopodous protozoa, which consist of structureless protoplasm, have foot-like temporary processes, and multiply by fission. The analogies here are marked, but not exact; for as Professor Lankester has shown, in no case have true monads *post*-flagella, such as are seen in Bacteria; nor are they flagellate at each extremity as three forms of Bacteria, have been shown to be, *i.e.*, *Bodo Spirillum* and *B. termo* (Dallinger and Drysdale).† Spermatozoa are familiar examples of these postflagellate organisms, simply reproductive agents. It is worthy of note here that Spirillum bryozoon has been proved to be the spermatozoon of a moss.‡ *Lister* is an advocate of the theory that Bacteria are not independent forms, but simply reproductive agents. He notes that in infusions they generally appear with certain fungi, and claims to have demonstrated the production of Bacteria by a fungus, *Dematium*. He gives a figure of this, but I am not aware that his views have been confirmed.§ *Hœckel* suggested the "Regnum Protisticum" to include all organisms which cannot be proved to be either animal or vegetable, on account of their extreme simplicity. The higher forms belonging to this kingdom "strike out" either in the animal or vegetable direction in the course of evolution.

* *Veterinary Journal*, i., 1877, p. 118.

† *Quart. Jnl. Micros. Sc.*, 1876, p. 26.

‡ Potash destroys monads, but not Bacteria, which are coloured red by iodine and sulphuric acid, and thus differ markedly from surrounding Infusoria. Griffith and Henphrey's "Micrographic Dictionary."

§ *Quart. Jnl. Mic. Sc.*, 1873, pp. 393-4.

Bacteria have been considered protistic, and probably are so, but exhibit Algoid affinities, and are therefore by most competent observers considered the lowest plants. They resemble the Algæ, in that some are known to generate spores (Chlamydospores), in that they are capable of assuming a stationary form comparable with the "resting" stage of Protococcus, and in that they are capable of living upon inorganic matters alone, as well as upon organic solutions; and, lastly, we must remember that the doubtful evidence of chemical analysis tends to prove their outer layer to be cellulose, and their inner substance protoplasm. Thus by Sach's they are placed among the Algæ in the order *Schizosporeæ* with Nostoc and its allies, which form gelatinous incrustations or masses on damp earth, etc. Bacteria the constitute family *Schizomycetes* (Cohn).

With regard to the classification of Bacteria, the matter is so complex that we shall give the views of the most able observers with care. The researches of Dallinger lead him to the conclusion that "on the whole, examination of the lowest organisms tends to confirm Darwin's views" that species are not distinct products of separate acts of creation, but result from the influence of surrounding conditions in producing modifications of form. Ray Lankester* views Bacteria as "Protean organisms," which, according to the necessary adaptations to surrounding conditions, assume the Leptothrix, Coccus, and other forms. And he is particular in impressing upon us that these modifications are not "alternations of generation," but true Protean strategies whereby destruction is avoided. We have seen that he satisfactorily gives the life-history of *B. rubescens* from this point of view. He allows that probably Bacillus is a distinct genus. He defines Bacteria as "all those Schizomycetes which under ordinary conditions of growth present biscuit-shaped plastids capable of active locomotion."† Billroth considers that the various forms found in putrefying solutions constitute one species, variations in form, etc., depending upon surrounding conditions. Adopting this view he classifies as follows :—

* *Quart. Jnl. Mic. Sc.*, 1876, p. 27.
† *Quart. Jnl. Mic. Sc.* Vol. xiii. New Series.

Coccobacteria septica. { Bacterium (Rod-like) { Micro, Meso, Mega ; Coccus (Round) { Micro, Meso, Mega

The Leptothrix form the terms *Streptococcus*, and the Zooglea is *Gliacoccus*, each being an aggregation of Cocci. I have roughly copied a few of his excellent and carefully-executed figures as indicating the size of these organisms.* Cohn considers that we must, at least provisionally, regard the various forms as distinct species.† Thus the Schizophytæ comprise

Gloegenæ. Tribe I.	Free cells, or those dividing binarily or quaternarily. Cells insulated into amorphous families of Mucus.
Nematogenæ. Tribe II.	Cell filaments unbranched. Fibres with false branches.

Later he seems to have somewhat modified his classification,‡ but into its complexities we have not time to enter; but we note in Tribe I. Chroococcus, Micrococcus, Bacterium, Clathrocystis, Ascococcus, and Sarcina (Goodsir),§ with which we are now more or less familiar. And in Tribe II. Bacillus, Leptothrix Beggiatoa, Vibrio, Spirillum, Spirochæte, Streptococcus, etc. A classification of Cohn's is into I. Chromogens, or colour producers, as B. rubescens; II. Zymogens or Saprogens, or ferments; and III. Pathogens, or disease producers, including the following noteworthy forms—Micrococcus vaccinæ (Sanderson and Chauveau); M. diphthericus (Eberth); and M. Septicus (Cohn). These are all forms of round or *Sphærobacteria*, including the genus Micrococcus. The next order is *Microbacteria*, comprising Bacterium, including B. termo and B. lineola (B. lactis, vibrio tremulens, etc.).

Order III. comprises *Desmobacteria*, with two genera, Bacillus and Vibrio.

Order IV., *Spirobacteria*—Spirillum and Spirochæte.

The following table is a summary of *Griffith* and *Henfrey's* subdivisions (see "Micrographic Dictionary," 1874) :—

* Billroth "Untersuchungen über die Vegetations-forme von Coccobacteria septica." Berlin, 1874.

† Cohn, F. J. "Uber Bacterien die kleinsten ebenden wesenden" in "Sammlung. gewess. Ständlichen wissenschaft Vortrig, etc. Sec. vii. Heft 165, 1866.

‡ *Quart. Jnl. Mic. Sc.* Vol. xvi. New Series. 259.

§ "Beitrage zur Biologie der Pflanzen," 3d Heft. 1875.

Infusoria or Algæ.
- Filament straight.
  - Inflexible (1) *Bacterium*, vacillating not undulatory movement.
    - B. termo (Duj.). V. lineola (Ebr.). Colourless, twice as long as broad, slightly swollen in middle, composed of one or two joints; lengths $\frac{1}{9000}$ in. to $\frac{1}{12000}$ in breadth, $\frac{1}{12000}$ in. to $\frac{1}{5000}$.
    - B. Catenula. B. punctatum.
    - B. triloculare (Duj.). B. lineola (Cohn). B. lactis (Lister). Oval, 2-5 times as long as board, 3-6 joints; length, $\frac{1}{2000}$ in. to $\frac{1}{3000}$ in.; breadth $\frac{1}{1000}$ in.
  - Flexible like a Serpent). (2) *Vibrio*, filiform, jointed from imperfect division, movement undulatory.
    - V. Subtilis—length $\frac{1}{430}$ in., breadth $\frac{1}{24000}$ in., with distinctly jointed filaments, straight, motile, not distinctly altering form.
    - V. rugula. V. prolifer.
    - V. Bacillus, length $\frac{1}{228}$ in., breadth $\frac{1}{7000}$ in.
    - V. lineola, v. serpens, v. triloculare.
- Filament Spiral.
  - helical (3) Spirillum (Spirochæte),
  - forming a flat spiral like a watch-spring. (4) Spirodiscus

This I give as the only classification by English authors which I have found. We may conclude this rather unsatisfac-factory list of different opinions, by quoting the remarks of Lankester on *B. rubescens*:—"We have in it (and probably also in the true physiological series of colourless Bacteria distributed under such form-genera as Micrococcus, Bacterium, Vibrio, etc.), an example of an organism which is highly susceptible of change of form in response to minute changes of life conditions, and in which such changes have full license, because *form* has very little importance in relation to the essential chemical phenomena which characterize the life of this class of organism and give them specific limits."*

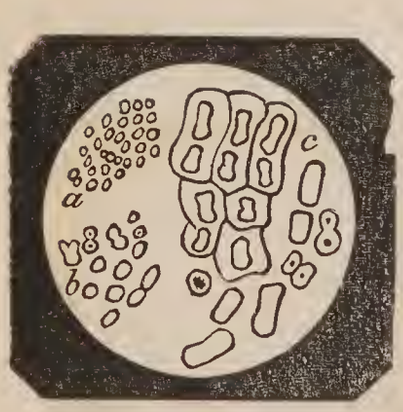
* *Quarterly Journal of Microscop. Science*, 1876, p. 30. With the exception of notices in the professional journals of progress made from time to time at home and abroad in the study of the life history of Bacteria, we can refer the reader only to one source of information in this matter in the works of English veterinary authors: Fleming's "Sanitary Science and Police"—where the Bacillus Anthracis is described, and figured after Böllinger and other Continental observers.

I shall trespass on your time and patience no longer, but trust you will excuse any prolixities into which I may have been led in my hope to thoroughly elucidate my subject. I doubt not that, with me, many of you will be surprised to know how vast is the field which the study of Bacteria opens, and will consider its practical bearings sufficient excuse for the introduction of this paper to your notice.

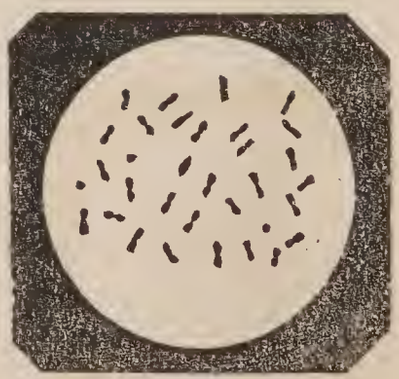
I. Micrococcus ureæ (after Cohn), X 650. Rosary-chain, Torula form; Leptothrix form. Streptococcus (Billroth).

II. Micrococcus vaccinæ (after Cohn), X 650.

III. Micrococcus; Zooglea form (after Cohn), X 650.



IV. Micro- Meso- and Mega-cocci (after Billroth), X 1185.
(*a*) *Micrococci* from decomposing blood.
(*b*) *Mesococci* from souring milk and decomposing muscle. (The lobed cell just above the letter is one of Billroth's "dauersporen.")
(*c*) *Megacocci.* (To the left of the letter is one of those cell aggregates of Sarcina form, which parallel the "tesselated" phase of B. rubescens, as shown by Ray Lankester.)



V. Bacterium termo, free motile form (after Cohn), X 650.

VI. Micro- Meso- and Mega-bacteria (after Billroth), X 1185. Between the *Microbacteria* (*a*) and the Mesobacteria (*b*) are some coccus-like forms, with a wedge-shaped tail appended to each; these remind us of the "dauersporen" with caudato appendage figured by Gutmann in his paper on Septicæmia. (*c*) Megabacteria—Billroth figures also some of these containing meso- and megabacteria.

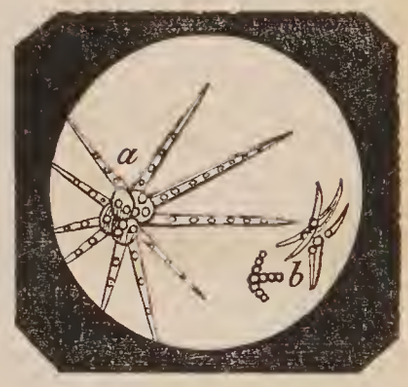
VII. Bacterium lineola, free motile form (after Cohn), X 650.

VIII. Bacterium lactis, grown in turnip infusion or sour milk (after Lister), X 1050.

IX. Bacterium lactis (after Lister), X about 1050.
(*a*) Motionless forms from Pasteur's solution, the Bacteria having passed through urine.
(*b*) Active phase of the same.
(*c*) Bacteria found in milk.

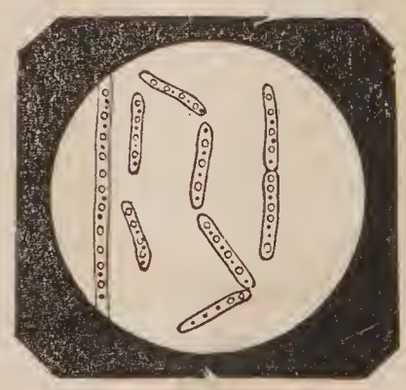
X. (*a*) Spirillum undula.
(*b*) Spirillum volutans.
(*c*) Spirillum tenue.
(after Cohn), X 650.

XI. Spirochæte plicatilis (after Cohn), X 650.



XII. Stellate aggregations of Bacteria forms.
(*a*) "Globigerina-like" form of B. rubescens, X about 1500 (after Ray Lankester).
(*b*) Forms of "Coccobacteria septica"—*v.* B. termo (after Billroth), X 1185.

XIII. Bacillus subtilis (after Cohn), X 650.



XIV. Bacillus ulua (after Cohn), X 650.

XV. Dematium fuscisporum (after Lister).
(*a*) Cells of various forms with hyphæ-like out-growths. The lower figure resembles a linear aggregation of true Bacteria appended to the cell.
(*b*) A Leptothrix filament growing out from the hypha, according to Lister; according to other authorities, temporarily attached to, and perhaps parasitic upon, two hypha, X about 500.

A SUPPOSED CASE OF POISONING.

BY "VIRTUTE ET LABORE."

IT is not an uncommon occurrence, during the course of a veterinary practitioner's daily duties, for him to be consulted about the death of an animal, or animals, which has taken place suddenly—or it may be that life has gradually ebbed away—and then it seems to dawn upon the owner that poisoning has been the cause. His mind is often "made up" without any inquiry. However much people may entertain suspicions that "unfair means" have deprived them of their property, yet they do not distinctly say so, but throw out hints of a very unpleasant nature, making servants and others about them feel very uncomfortable; and although themselves conscious of their innocence they do not well know whether their master acquits or suspects them. The following case in point came under my notice, and is only a specimen of many others:—

A certain client owned a valuable brown retriever dog, about four years old and very healthy; so much so, that he had "never had a dose of medicine." About 2nd November, 1877, this dog showed symptoms of ill-health by suddenly having a "violent attack of vomiting and purging." On the 5th a dose of castor oil was administered by order of the owner. The animal continued at intervals to vomit and retch, up to the 20th; but then the retching was more frequent and laborious than at any other time. The creature was much exhausted and very weak; he lay for nearly the whole of the 21st November, and died during the night. During the whole of this period, I am told, he "refused all food, and never had any other medicine except the castor oil." On the 22nd I was asked to proceed to the house and make a *post-mortem* examination of this dog, which was supposed to have been poisoned. Upon arrival I was met by the owner and his brother, who gave me the above particulars, and stated they were very suspicious that some of the servants about the place had administered poison, but who they were they could not be quite sure, though they feared that a certain person—mentioning the name—was very likely the culprit. However, this was a matter I did not wish to investigate, and therefore

desired to see the dog. He was of average size, but very thin and so wasted that he was not much more than a skeleton. The skin and mucous membranes of the eyes and mouth were highly tinged with yellow. The hair on the body was easily removed, which was certainly not to be expected in November, if the dog had been healthy. An incision was made into the abdominal cavity. The flesh was as highly tinged with yellow as the mucous membranes. The stomach and intestines were carefully removed and laid to one side. The liver was enlarged, and comparatively easily broken down. The gall-bladder was nearly empty, but seemed larger than normal. The kidneys were surrounded with very little adipose tissue, but this, with the kidneys, heart, lungs, and thoracic cavity, was deeply tinged with yellow. The stomach was empty, contracted, and yellow in appearance, and its pyloric orifice was inflamed. In the duodenum I found a stone—a sea-pebble—which was irregular in shape, about two inches long by one-and-a-half inches broad, and weighed three ounces. Just where this stone had lain the bowel was swollen and discoloured. The opening of the biliary duct into the duodenum was very much tumified and flattened on its surface, as though something had been pressing against it. There was nothing to show that poison had been administered, the only other contents of the duodenum being about two ounces of a dark-greenish and rather tenacious fluid. In the large intestines the feculent matter was scanty, but very light in colour. The œsophagus presented no appearance requiring comment.

Remarks:—I think this is a case which shows a want of care on the part of the owner. He never tried to save his dog's life, but only gave a dose of castor oil. I understand there was no attempt made to nurse the animal. He had his usual food placed before him—if he took it, well and good; if not, he was "not pampered." No medical advice was sought. It seems that the dog was fond of running after pebbles when they were thrown into the sea by any one, and it is very likely that two had been thrown immediately after each other, and the dog, wishing to retain both, accidentally swallowed one. I surmise that the first attack of vomiting would occur shortly after swallowing the stone, and those occurring subsequently would be due to the

continued irritation this foreign body had set up in the attempt to force it through the pyloric opening. It is very possible that the flattened side of the stone took up its position against the opening of the biliary duct, thus giving the margin of this part a flattened appearance, as well as preventing the flow of bile into the duodenum, and in this way dilating the gall-bladder and also producing an absorption of bile which fully accounts for the general yellow tinge which pervaded the whole of the body. It may be asked whether the greenish-looking fluid in the duodenum had made its appearance there previous to or after death? I am inclined to think previous to death, because of the appearance of the intestine in contact with the stone. The last and most violent attack of vomition, which occurred the day before death, and continued nearly the whole of that day, might be due to the increased flow into the duodenum after the removal of the stone from the orifice of the biliary duct.

I may conclude by saying that the appearance of the pebble, which was shown to the owner without delay, freed every one from suspicion of poisoning, and the news of this "find" soon spread among those immediately interested, giving great satisfaction. This case is a very valuable testimony in favour of autopsies, and if it is deemed worthy of a place in the valuable Journal, it will give me pleasure to tender it as a contribution.

CASE OF DISEASED URETER (?) IN A HORSE.

BY L. BUTTERS, M.R.C.V.S., NORWICH.

THE subject of the above-mentioned condition was a chestnut cart-gelding, about nine years old, which had been at work upon a farm in this district up to the time of his being taken ill. I was first called to him on the 28th May last, the messenger saying, "He could not get rid of his water, and would I either send a drink, or go and see him?" On arriving at the farm, I found the animal standing still in a yard, showing no sign of pain; pulse seventy-two, breathing natural. I suspected he had been suffering from abdominal pain, and made an examination *per rectum*, which contained a small quantity of hard fæces covered with mucus, the lining membrane being dry. I con-

cluded that his bowels were in a constipated state, and administered some anodyne medicine, and also a purgative and injections. On the following day he appeared to be better; his attendants had seen him micturate, and he had fed pretty well. The medicine was also beginning to act, and thinking there was no occasion for my seeing him again, I left instructions that if he did not go on all right I was to be informed at once. On the following day it was reported that the animal had been very uneasy, and was much worse. I found him looking very dull, and he had evidently been in a great deal of pain, as there were several abrasions on different parts of the body. Pulse seventy-two, and he had a very anxious look. His bowels had responded to the medicine. He went on in this way for more than a fortnight, being every now and again attacked with severe abdominal pain and again suffering from constipation. Sometimes the fæces had a tinge of blood mixed with the mucus which covered them.

I thought there was probably inflammation of the mucous membrane, or some diseased state of the intestines of an obscure nature. The animal lost flesh rapidly; he would not eat, and had to be supported with ale, etc. Matters went on like this until the 14th June, when I was again sent for. He was then rolling about; pulse 100, weak and indistinct; eyes sunken; and he was evidently in a dying state. On making an examination *per rectum*, a large swelling was found at a considerable distance within, but above the gut, and at the right side of it; this was very tense, and it was difficult to say whether it contained pus or not, except by its unexpected appearance, as the intestine had been explored on every occasion without there being any sign of it until now. I resolved to operate upon the tumour, and had him with some difficulty removed to the infirmary. I made an opening at the right side of the anus, and extended the incision inward along the wall of the gut, and through the pelvic fascia. I then worked through with the hand until the enlargement was reached; this was punctured with a good-sized trocar, but without anything passing through the canula. An incision was then made upon it, and this gave exit to a large quantity of pus which had a very offensive smell. Some difficulty was experienced during the operation through cutting the internal

pudic artery, which bled very much, but which was stopped by a ligature being put upon it. The distance of the abscess from the external opening was about twenty-eight inches. The wound and abscess were well cleaned out with a syringe and carbolic acid lotion, and a pledget of tow was introduced. The wound went on very well, and the animal began to feed and improve, when one morning the attendant informed me, "He had seen him stale, and the water came through the wound as well as through the penis." Sure enough this was the case, and every morning I found the wound contained a quantity of urine, which ran out when the horse moved. I showed the animal to the members of the Norfolk and Eastern Counties Veterinary Medical Association, at the meeting on the 3rd July last, and also to three or four medical gentlemen who were present. Up to this time I was not aware of the true seat of the abscess, when, acting upon a suggestion of one of the members—viz., to keep a catheter in the penis by a suture through the sheath—I found it emptied the bladder, but the urine came through the wound (which by this time was a mere narrow tube) in a continuous stream; showing that its origin was directly from the kidney, and that it flowed as fast as it was secreted by that organ, while none came through the catheter after the bladder was emptied, the urine in the latter being thicker and oily in character, while that from the wound was like water. The animal began to feed well, regained flesh, and almost recovered his former condition. There was no recurrence of the pain after the operation was performed, but nearly the whole time there were petechial patches on the Schneiderian membrane, and sometimes blood issued from the nostril. Iron was administered, combined with vegetable tonics, and a day or two after he left the infirmary the symptoms disappeared. I saw his owner on the 5th inst., when he informed me the horse was doing very well. There was a very minute opening, and the quantity of urine which passed through it was extremely small. Whether it will cease altogether or not, remains for time to show. In my opinion, there is a diseased condition of the ureter, and the artificial opening is the only outlet for the urine secreted by the kidney on the right side.

CASE OF ANGIOMATA IN A FILLY.

BY W. MARSHALL, M.R.C.V.S., GLANTON, NORTHUMBERLAND.

DURING the last few months I have, in my veterinary practice, met with some very interesting cases, and I believe of very rare occurrence, as they have not been adverted to by our most popular veterinary writers. I will therefore, with permission, relate one of Angiomata on the vagina of a two-year-old filly. About five months ago, A. Moffat, Esq., of Beanley, near Alnwick, drew my attention to a purple protuberance within the vagina of the filly, but at this time it could only be seen during micturition, or when in the recumbent position. On the 2nd of August the owner resolved to have the enlargement removed, as it could then at all times be seen outside the vulva. I forthwith cast the animal, and found two soft boggy tumours, one near the outside of the vagina, and the other about three inches further in. After making a small incision into the one most accessible, out gushed about four ounces of perfectly liquid, dark-coloured blood, which rapidly coagulated upon the ground. The flow being continuous, I compressed the incision with my fingers until I gained time to "chew the cud of reflection." I at last concluded that they were only venous vascular tumours, from the fact that there was no pulsation to be felt, and also from the colour of the blood. I now cut away the whole of the envelope, which was of an irregular fibrous texture, and after causing a copious stream of cold water to be applied to the bleeding vessels, I inserted a few uninterrupted sutures over the lesion, so that they might act as a compress to the now open and exposed inosculating veins or capillaries. I operated on the other sac in the same way, but in consequence of its being deeper in the vagina, I experienced more difficulty. The parts very soon regained their normal condition, and recovery was complete in a short time.

ON THE UTILIZATION OF HORSES WHICH HAVE UNDERGONE PLANTAR NEUROTOMY.

BY W. PALLIN, M.R.C.V.S., 20TH HUSSARS, MANCHESTER.

I READ with much pleasure the interesting article on the above subject in last month's Journal, as it is one which I have had under consideration for some time, and had often thought of bringing it more especially before the members of the Army Veterinary Department, to whom I think it is of much importance. But it is particularly gratifying when taken up by so senior an officer as Mr. Fleming, and treated by such able hands; for it is an operation which, when properly applied and carefully performed, I feel certain will not only benefit the army, but often save from many a hard day between the shafts of a hansom cab, a trooper which would do good service in the ranks.

There is seldom an annual casting of any of our cavalry regiments that one does not find the term "Incurably lame from Navicular Disease" opposite a number of horses, and not unfrequently some of the best. Like many other terms in our nomenclature, this is a convenient one for foot-lameness, as well as being one which, from its length and scientific sounding, at once shakes off all further inquiries from the Inspecting General or commanding officer. Year after year I have seen many of our young troopers sent to the hammer and sold for a song, no doubt lame from Navicular Disease; but my hand has often itched to operate on them, as I believe four out of every five, if carefully unnerved, would give an average of three or four years' more work in the ranks, and often sell quite as well, if not better, when afterwards cast. But, as Mr. Fleming says, the idea that they would be unsafe to ride, or that at the first parade they attended their hoofs would come off, seems to have haunted the minds of most commanding officers, and I consequently felt it unwise to suggest the operation as a means of rendering the animal workably sound. Indeed, for a long time I had the idea that a horse once unnerved would be most unsafe in his action, but more especially over fences or rough ground. An incident which changed my opinion considerably on that point I must

allude to, and my experience since has not changed it very much. It is useless to assert that a horse unnerved is as safe as one with the free enjoyment of sensation ; still, after a time the defects in progression are much less than most people imagine.

Some years ago, and before entering the army, I operated on a valuable hunter, the property of a gentleman in Kildare, the animal having shown unmistakable symptoms of Navicular Disease for some months previously, and which had been unsuccessfully combated by the milder forms of treatment for the disease, without any benefit. Although the horse went sound, the owner feared to ride him and sent him to be sold in Dublin, where he was disposed of for a small price, and I then lost sight of him. The following Punchestown Races, to my surprise, amongst a group of horses walking round the paddock previous to saddling for an important race, I recognised my old patient, bandaged, clothed and trained, ready to take part in the cross-country contest, and surrounded by a host of admirers willing to back him at any price. Having satisfied myself that it was no other than the same animal, my first impulse was at once to find out the jockey who was to ride him, and warn him of his danger by telling him his mount was devoid of feeling in both fore-feet ; but the saddling bell had already rung, and in a few moments more he jockey emerged from the weighing-room, and the next view of the horse was his tearing up the course in the preliminary, and "pulling double." I was sorry for the jockey if he felt as I did at that moment, for if he did I fear he and the horse would have parted company at the first fence, as I was certain there would be a smash before the end of the long and difficult three miles of the Kildare Hunt-Cup course. It was not until I saw him again in the front rank, passing the stand in the first round, that I breathed freely, and even then I felt very guilty, and had he come to grief badly, I don't think I should ever have operated on another horse, except in such a way as would have left unmistakable traces after it. The "old horse wins," screamed a thousand voices, as the competitors safely cleared the last bank (now taken away for a gorse fence) the last time round, and from that moment the operation went up in my estimation a hundredfold, and I almost lost all interest in the finish (and it was a close one, with my

patient a good third), resolving I would operate for the future on every animal, young and old, which showed symptoms of Navicular Disease. Neither owner or jockey knew the horse had been operated upon, and he was soon after, on the strength of his performance, sold for a good price to come to England. It is idle to think that all cases are as successful as this was, as experience soon told me; but, like Mr. Fleming, I consider that in careful hands the advantages well outweigh the disadvantages of the operation, and I have selected this instance merely as a practical example. A more recent one has occurred. Towards the end of last year, a particularly good young troop-horse in my regiment became lame, and was treated for Navicular-thritis, with blistering, rest, etc., etc., but without any benefit; at the same time he became low in condition and wasted, from evident pain and want of work. So hopeless a case was it, and being so long to keep the horse until the annual casting, that I almost decided calling a Board with a view to have him destroyed. I suggested the operation to my commanding officer, who is thoroughly practical and fully alive to getting a full measure of work out of his horses, and hinted that probably he would not eat so much idle forage till the casting. In a fortnight after the operation the horse went to his troop, *and has never missed a parade or field-day since*, while he has recovered condition and is going sound. Further, the officer commanding the troop to which he belongs would not hear of my including him in this year's returns of cast horses. I am watching his feet carefully, and I think they have grown a little and expanded, and are looking healthy.

I feel sure Mr. Fleming will permit me to add a few words of finish to his excellent and practical description of the operation—namely, the antiseptic course of treatment, which I have found most successful. The operation is often followed by a troublesome, unhealthy wound, which I have always found most difficult and slow to heal, and sometimes leaving a considerable permanent blemish after it. With this treatment such a thing is avoided, and the great advantage of healing by "first intention" and without suppuration is gained. It consists in operating entirely dry, and avoiding all contact with moisture. My plan is to put

a soft dry towel under the leg to be operated on (which should also be quite dry); then, as the blood comes from the incisions during the operation, it is gently removed with the towel, instead of a wet sponge, as is generally done. After the nerve is divided, the hair at the edges of the wound is to be removed and the parts carefully brought together with a silk suture steeped in carbolised oil, over which is placed a pad of lint soaked in the same liquid, and over all a good, long, dry linen bandage enveloping the whole leg. The horse is kept tied up, and the bandage or dressing not removed for at least four or five days, when the wounds will generally be found healed, and no suppuration or unhealthy granulation to be seen. If they should not be quite healed, replace the dressings and bandages for a few days more.

FIBROUS TUMOUR ON THE RIB OF A DOG; ASCITES AND DEATH.

BY H. DARLEY, M.R.C.V.S., WINDSOR.

I HAVE forwarded to the Brown Institution a tumour removed from a mastiff bitch. Mr. Simpson, M.R.C.V.S., with whom I am assistant, was asked to remove it on July 9th. After an examination, he was of opinion (as the tumour was attached to the ribs) that it would be better not to operate, but to endeavour to reduce it by iodine. He therefore prescribed iodine ʒss, spt. vini rect. ʒii. This was to be rubbed into the tumour daily. On the 15th the animal was not feeding, and on examining her it was discovered that she was suffering from Ascites. Tonics and diuretics were prescribed; but on the 16th she died. On making an autopsy, considerable effusion was found in the abdominal cavity, as well as the tumour now sent. The two detached portions were accidentally removed in cutting through the diaphragm. The tumour was five inches long, four inches wide, and two inches thick.

[Mr. Banham examined the specimen, and reports as follows:—The tumour was situated on the seventh rib (counting forwards from the diaphragm), the rib passing apparently through the centre, the ribs on either side being pushed considerably beyond

their normal position. As will be perceived, the growth was somewhat considerable for a dog, especially as it was quite as large on the outer surface of the rib, as I have described it on the inside. The nature of the growth appeared to be fibrous, with several cysts containing fluid. When the tumour was removed from the ribs, the seventh looked spongy and enlarged, as though it had been fractured at some time, and true ossification had not taken place. Whether or not this was the case, I could not be certain, though maceration in water will probably further elucidate the point.]

THE EFFECTS OF LIGHTNING ON ANIMALS.

BY W. F. ANDERSON, VETERINARY STUDENT (WITH MR. E. STANLEY, M.R.C.V.S., NORWICH).

SEVERAL cattle having been killed by lightning in this neighbourhood, my interest has been excited in the subject, and on searching such veterinary records as were at hand, disappointment at the paucity of information only increased a thirst for knowledge.

As insurance of stock from fire usually includes losses from lightning, the importance of accurate diagnosis at once suggests itself, and this brief article is written with the view of elucidating the subject; and as many of the experienced contributors of the VETERINARY JOURNAL can no doubt add much useful matter upon the point, it is to be hoped they will do so.

The query is, Supposed death by lightning. What are the recognised diagnostic symptoms and reliable *post-mortem* appearances?

The following cases are recorded in the *Veterinarian*:—

(1.) *September*, 1864.—Four valuable colts, racing stock, were killed, a mare completely paralysed, and others suffering from partial paralysis, the lightning having affected their nervous system.

It would be interesting to learn the ultimate result of these injuries.

(2.) *July*, 1865.—A farmer's son, and one hundred and fifty-two (152) sheep were killed in Luxemburg by lightning. The sheep were covered with blood, and showed the most extraordinary effects of the lightning. The

heads of some were pierced through and through, while the heads of others were removed from their bodies.

(3.) *November*, 1868.—Out of a flock of five hundred and fifty-four (554) seventy-seven (77) were found dead (after a severe storm, during which the lightning had struck the cliff near the sheep-fold), and two more were in a state of stupor.

(4.) *November*, 1871.—Simply records the instantaneous death of an elephant at the *Jardin des Plantes*, Paris, from the electric fluid.

On the 3rd of August, 1879, a violent thunderstorm, with heavy rain, passed over not only this neighbourhood, but England generally. Between one and three a.m. it reached its height, and at seven a.m. Lord Warwick's shepherd found eleven dead bullocks, of an average value of £22 per head, under an elm-tree in the Park, placed as though their legs had suddenly given way, propped on brisket and belly, lying easily one against another; some on the outer circle had rolled on to their side.

They were all distended with gas, which was bubbling from the nostrils and anus of some; fæces had passed involuntarily; decomposition was rapidly setting in; the pupils were dilated, and *rigor mortis* was complete.

Not one seemed to have struggled in the slightest, as no grass was disturbed, and the horns, feet, mouths and skins were perfectly clean; so that death must have been instantaneous and painless.

The whole of their skins were intact; only on one, by very careful inspection indeed, could slight traces of singeing of the muzzle, face and shoulders be detected; several of them were white beasts, so that such burns could not have been overlooked. All of them were skinned within twelve hours after death, and except two, whose forehead and stifle presented a bruised appearance—most likely caused by their sudden fall—there was nothing to show they had been struck. Indeed, the butcher said that had they been stuck immediately they had fallen, they would have died as "bright as silver."

The blood had settled somewhat in the inferior parts of the body, so that coagulation had taken place gradually.

Their carcases were buried, and the fat with bits of muscle having been hurriedly collected, presented a much darker ap-

pearance than usual, probably from the absence of venesection; but when melted down the fat appeared to be as good as usual.

Expecting to find startling evidence of the ravages of the lightning, the ocular demonstration was at least disappointing.

The tree, a high elm—by no means a solitary specimen in this thickly-wooded park—was only scored in two places down the trunk, on almost opposite sides, in an irregular zig-zag manner, about an inch wide, and several feet long, but no deeper than the bark, shreds of which were scattered several feet from the base of the tree. No other damage was done to it or to the ground in the park.

Although one hundred and sixty (160) head of cattle, and two hundred and fifty (250) sheep were distributed through this park, not one presented the symptoms of being in the slightest degree affected: the inference being that the fated eleven were isolated under this particular tree.

On the same day as that on which the cattle were killed, only ten miles away a horse was struck in the open field. The breast along the off-side and the flank and both the hind legs were scorched and blistered; the skin was not broken. He died without a struggle. One of his shoes—which were not loosened or moved from his feet—was struck by the lightning, and had a black mark about two inches long, but was not rendered at all magnetic. There was a hole, with scorched margin, in the earth where the electric fluid had disappeared, close to the horse.

Our standard veterinary works seem to omit this subject: at least, so it appears in a hasty glance through them.

In the *Veterinarian* for November, 1869, are described the physiological effects of lightning. The following extracts bear somewhat on the present inquiry:—Muscular rigidity; coagulation of the blood; decomposition; marks of various kinds, burns; ecchymosis, loss of hair.

On reference to Taylor's "Medical Jurisprudence," many interesting details are given of the effects of lightning on the human being, and the cases offer points of similarity with those recorded above.

CASE OF LOODIANA FEVER AT A HIGH ALTITUDE.

BY J. A. NUNN, M.R.C.V.S., ROYAL ARTILLERY, PUNJAB.

I SEND the following account of a case of Loodiana Fever which, from its taking place under somewhat peculiar circumstances, may perhaps be of some interest. On the morning of the 17th of June I was requested by an officer of the 17th regiment to look at a bay, five-year-old, entire pony, which he said was dangerously ill; but on my arrival, in about ten minutes, the animal was dead. On inquiry, I was told that he was taken ill on the evening of the 15th June, with a difficulty in swallowing and a slight swelling in the region of the parotid glands. The next morning, the 16th, he was seen by the farrier-major of the 10th Hussars, who applied mustard to the throat and along the course of the trachea. In the evening he was much worse, and evinced symptoms of colic. He died on the morning of the 17th, at about 7.30 a.m. I was unable to procure a thermometer until nearly four hours after death, when the temperature, taken *per rectum*, was 99° Fahrenheit. On removing the skin from around the neck and throat, the usual yellow, jelly-like infiltrations were seen, and a quantity of serum escaped; the trachea was inflamed and covered with petechiæ on its inner surface. On opening the abdomen a quantity of amber-coloured liquid flowed therefrom, and also from the pericardial sac; the bowels and peritoneum showed patches of congestion and petechiæ—in fact, the case exhibited the usual *post-mortem* appearances of Loodiana Fever. The peculiarity of the case seems to be in its occurring at so very high an elevation—this station, Murree, being over 7,000 feet above the sea. The pony was brought from Rawul Pindi, and had been up in the hills about a month. He was in good condition, and had been regularly ridden by the owner. The stable was well ventilated, but the floor was of earth, and did not appear to have been renewed for a long time, being infiltrated with drainage, and very foul. The weather was fine, and rain had fallen a week previous to the attack. An outbreak of Loodiana Fever occurred in the 10th Hussars and Royal Artillery at Rawul Pindi during the summer and autumn of 1878, of which an account was given in the VETERINARY

JOURNAL, but I am not aware of any cases having been observed during the present year. On looking over the records of the disease that I have at hand, I cannot find any mention made of the malady occurring at such a high elevation. I had not a microscope with me, so was unable to examine the blood, which was very dark and tarry.

Editorial.

THE INSPECTION OF MEAT AND SLAUGHTER-HOUSES.

IT is somewhat remarkable that the discovery of trichinæ in American pigs and pork imported into this country—for we may be allowed to suppose that the most obtuse and ignorant person in England does not now maintain that the question of United States pigs being infected with these dangerous worms has still to be determined—has not led to the adoption of measures for securing the public against the dangers of diseased meat. It is quite true that few countries in Europe are more behind the age in this department of Sanitary Science than our own, and that even when danger is pointed out and its extent made manifest, no initiative can be taken, nothing can be done, until months, perhaps years have elapsed, and incalculable damage been incurred. This has been the history of Medical and Veterinary Sanitary Science in Britain, and we fear it will be so to the end, unless more enlightened views are allowed to prevail in high places. This lamentable absence of forethought or of care for the public health, was well exemplified when the muscle-worm was found infesting pigs and pork sent to us from America. On that occasion the public were recommended by the Government to cook the meat thoroughly. The advice was stale and trite enough, and if it could be always carried out would relieve governments of a good deal of what one of them at least appears to consider unnecessary trouble. But thorough cooking cannot be ensured in every instance, and the proffered cheap advice of a non-paternal Government occasioned some merriment among those who understand such subjects.

There is no use in concealing the fact that the public health is greatly exposed to injury by the Government neglect of meat inspection. There are febrile and constitutional maladies of animals which are not only unrecognised by the Veterinary Department of the Privy Council—destructive though they are—but which render the flesh of the animals positively poisonous to those who have the misfortune to consume it as food. Then there are the parasites found in flesh, as the muscle-worm, measle, etc., which, so far as we are aware, though doubtless greatly abounding, yet find no place in the Government sanitary nomenclature. Of the extent to which Trichinosis prevails in animals, or even people, in this country we are in complete ignorance, as no steps are taken to ascertain this point; and it is the same with other parasitic infections.

The carcases of animals which have died from, or been killed in consequence of virulent disorders, or which teem with worms that may occasion the most serious disturbance in those who may chance to ingest them in improperly cooked joints, can be, and are exposed with absolute impunity in meat market and on butcher's stall. Not only this, but animals which may have been under medical treatment and drugged with the most poisonous substances previous to death, have their carcases dressed and offered for sale as food without let or hindrance. True, now and again at distant intervals a seizure of diseased meat—never that infested with parasites—is reported; but this is a mere accident, and the number of such seizures bears no proportion whatever to the extent of the traffic; and it is far more frequently meat which has been badly dressed or is in a state of decomposition, not that from an animal which has been suffering from disease. The majority of those who play the part of inspectors know little, if anything, of the disorders which render flesh dangerous, nor yet of the appearances which should lead to its detection when it is offered for sale. Certainly, there is no evidence that they are at all acquainted with these parasitic conditions of meat which are quite as objectionable as disease; for we never remember hearing of an instance in which these functionaries rightly condemned flesh because of its being worm-infested. That parasitic flesh is not a scarce commodity there is no reason to doubt; and only the other day, in the main thoroughfare of a royal borough, at the door of a butcher's shop we saw portions of the carcase of a pig containing a plentiful supply of the characteristic bladder-worms, the larval form of the human tape-worm *Tænia solium*.

The remedy for this discreditable and dangerous state of affairs is obvious, though we fear we shall have to wait many years before it is adopted, as human and animal health is not yet sufficiently valued among us to receive that attention which would lead to its protection from disgusting and oftentimes fatal disorders. The fact is, that in the matter of meat inspection we, as in many other affairs, commence at the wrong end. Inspection should begin at the slaughter-houses, and the first step to be taken in this direction is the suppression of those abominable dens of filth, cruelty, and diseased flesh—the private slaughter-houses, and the substitution of public abbatoirs. No animals—cattle, sheep, pigs or goats—except by special permission, should be killed for food beyond the precincts of the abbatoirs, and every animal and every carcase therein should be inspected by a well-trained Veterinarian. Only in this way can the public be certain that dangerous flesh is not offered for sale. The increasing prevalency of Trichinosis urgently demands that the flesh of the pig—the animal which is most to be dreaded in this respect—should be submitted to a microscopical examination before it is allowed to be sold as food—a precaution which is adopted in other countries. We learn, for instance, that the police authorities of Berlin have issued an order relative to the compulsory inspection of meat within the city district. The first paragraph provides that any one killing a swine, or causing it to be killed, must have the flesh microscopically examined by the official inspector of meat appointed to the district in which the

animal is slaughtered. Only on the production of a certificate from this functionary that such examination has been made, and that no trichinæ have been found in any part of the body inspected, may the carcase be dressed and the meat exposed for sale. The second paragraph provides for the division of the district into sub-districts, and the appointment to each of them of one or more inspectors. The new measure comes into force on the 1st of the present month.

Not only should the abbatoirs be under Veterinary supervision, but thoroughly competent Veterinary Surgeons ought to inspect butchers' stalls and other places where meat is sold, in order to detect evasions of the law, and pronounce as to the healthiness or otherwise of their contents. Until these measures are adopted and rigidly enforced, the present extensive traffic in meat unfit for human food will continue and increase, greatly to the detriment of the public health and well-being.

THE WAR IN AFGHANISTAN.

THE resumption of hostilities in Afghanistan again draws attention to the recent enormous loss among camels during the late advance of the three military columns. At the commencement of the campaign, it was computed there were 180,000 camels in the Punjab. The usefulness of these animals in ordinary times is very great, as in many districts of that wide region they form almost the sole means of transport, and when their numbers are diminished, so do the facilities for land carriage—a most essential item in the well-being of the Punjab, as of some other countries—decrease. As mentioned in this Journal, no fewer than 61,000 of these animals have been expended during the late operations—more than one-third of the number in the Punjab—and now that hostilities have been resumed, and transport is more than ever necessary, the immense and apparently unnecessary destruction of camels and other weight-carrying animals most seriously influences forward movements. We have dwelt in strong terms on the neglect of the Indian Government in this matter, and on its non-adoption of precautions which were suggested, and which were well within its means. We trust the lesson will not be lost, and that the government may show itself more in harmony with changed times, and recognise the necessities of modern warfare. India, of all countries in the world, appears to exercise the most powerful fossilizing effect upon the Western mind.

In addition to the mortality among the camels, the little war, of brief duration and insignificant marching, also entailed a loss of 32,000 transport and slaughter bullocks—chiefly, it is reported, from Cattle Plague and Foot-and-mouth Disease. In "Veterinary Sanitary Science and Police," and elsewhere, we have endeavoured to show that Asia, and more particularly Central Asia, is the home of these two scourges, of which we have so many painful reminiscences in this country. A most interesting and curious fact, and one which is unique, we believe, in comparative pathology, must be recorded. The *whole* of the elephants of the Kurum field force, one of the three divisions of the British invading army, suffered—many of them most seriously—from Foot-and-mouth Disease! The symptoms were very marked and unmistakable—saliva flowing from the mouth; feet swollen and showing open sores, the soles of the feet in some instances sloughing off, and carrying the toe-nails with them. All the elephants recovered. There was, of course, a

difficulty experienced in exploring the mouth, in order to determine the presence of vesicles or ulcers.

A number of cases of poisoning by "grass" occurred, and as a specimen of the plant has been forwarded to us, we shall again refer to this subject.

THE TRANSMISSIBILITY OF SWINE PLAGUE.

NOT long ago we announced that Professor Law, Veterinary teacher at the Cornell University, had successfully communicated Swine Plague, by inoculation, to a rabbit and a sheep ; and the identity of the disease in these animals was proved by its re-transmission, in the same manner, from the rabbit to a healthy pig, when all the symptoms of the disorder were manifested by the latter. It appears that, since then, Dr. Detmers had observed a cow suffering from Pleuro-pneumonia, which had been sent to Chicago in a railway truck partially filled with swine, and the editor of the *Live Stock Journal* of that city suggested that it might be nothing more than communicated Swine Plague. To test the value of the suggestion, Dr. Detmers resorted to experiment, and we find the following in the *Chicago Daily Tribune* of July 12th :—

"In May last he bought two heifers, both in a capital condition of health, and inoculated in the ear both with the pulmonary exudations of hogs infected with the Swine Plague. The animals were then placed under careful scientific surveillance. In due time the heifers showed symptoms of disease; but the attack was a light one, and in the course of a few days the strong constitutions of the animals enabled them to throw it off. A second inoculation was performed. With the aid of a hypodermic syringe a drachm of the pulmonary exudation from a diseased pig, just killed, was inserted in one of the heifers, and half a drachm in the other. The pig was killed for the purpose, so as to escape all possibilities of Pyæmia. In the course of a week the disease, which in its symptoms indicated Pneumonia, was quite plainly developed. The attack, however, was a light one. July 3rd one of the animals was killed for *post-mortem* examination. Some morbid changes were found. There was a distinctly limited hepatization in several places in the posterior and anterior of both lobes of the lung. Serum was found in the chest and abdominal cavity. Nearly all the lymphatic glands were enlarged. Everything else was in its normal condition. The hepatization which was thus produced in the heifer by the inoculation from Swine Plague was almost identical with that which is one of the characteristics of contagious bovine Pleuro-pneumonia.

"Some time ago the English papers were filled with articles stating that cattle troubled with contagious Pleuro-pneumonia had arrived at Liverpool from the Western States. Prof. Williams, a well-known scientist in Edinburgh, who has devoted many years to the investigation of contagious diseases in the animal kingdom, contradicted the reports published in the English press. If the cattle came from the West, Prof. Williams, says Mr. Detmers, was undoubtedly right. The disease, which was pronounced contagious Pleuro-pneumonia, was not such, but an infection somewhat resembling it, and emanating from the Swine Plague. There are two ways in which the latter might be absorbed by cattle, either from scratches externally, or from feed and water internally. All the excretions from diseased hogs swarm with the *bacillus* germs, which are the primary cause of the plague. The commingling of one hundred hogs and fifty cattle in any yard or pasture would no doubt result in some of the latter becoming inoculated with the disease, provided any of the porcines were troubled with the Swine Plague.

"Prof. Detmers found that the disease communicated to the cattle by inoculation is of a mild type—in fact, so mild that its existence would not be noticed unless by close observation.

"In answer to a question propounded by the reporter, Mr. Detmers said that the disease was not dangerous. The heifers on which the experiment was made kept fairly in flesh. The temperature increased to 104·6° and 104·8° F. Respiration was accelerated, and the cattle acted a little dumpish.

"With the aid of a lancet some of the blood was obtained for microscopical examination. It was found to contain some of the *bacillus* germs, as in the diseased hogs suffering from the Swine Plague."

Our American cousins were at one time extremely anxious to make us believe that contagious Pleuro-pneumonia did not exist among their cattle, and they allowed our Government to declare the United States a "clean country," notwithstanding that we had years ago pointed out the existence of that disease there. Then, when it was at last discovered among their imported stock at Liverpool, everything was done to discredit the fact. It was soon found, however, that the contagion prevailed in several States—a circumstance well known for a long time to the veterinary profession in America, and energetic measures have since been adopted for its extinction, thanks to the action of the English Government. It is true that one or two veterinarians in this country denied that contagious Pleuro-pneumonia was present in one cargo of diseased American cattle, from their being unable to detect the characteristic lesions of the disease ; but the balance of evidence was greatly in favour of its existence, and the arrival of other infected cargoes leaves no doubt as to the correctness of the opinion furnished by nearly all the experts called in to decide the question. Dr. Detmers fancies these cattle were suffering from Swine Plague, and states that the transmitted disease left lesions in the lungs almost identical with those of bovine contagious Pleuro-pneumonia. He evidently overlooks the fact that Professor Williams asserted that none of the cattle of the diseased cargo offered these lesions. There is no proof whatever that the cattle from the United States condemned in this country as affected with Lung Plague, had received the malady from diseased pigs ; and we require far better evidence than Dr. Detmers gives to warrant us in believing that the Swine Plague is transmitted in any other way to other species than by inoculation, or that the symptoms and lesions of that malady are identical with, or even analogous to, those of the bovine scourge. Our own experience does not allow us to accept Dr. Detmers' hypothesis. We have repeatedly known the disease destroy nearly all the pigs on a farm, and though these animals associated more or less with the cattle, the latter remained unaffected. Some of the American cattle were most seriously diseased, and the malady from which they were suffering was, according to the weight of evidence, undoubted bovine Pleuro-pneumonia.

VETERINARY MEDICINE IN SWEDEN.

THE first veterinary school in Sweden was founded by Hernquist, who was born in 1726. After passing his examination as a doctor in philosophy, at the University of Upsala, Hernquist went, in 1763, to France, and more especially at Lyons studied veterinary medicine. In 1744 he established the Veterinary School of Skara, Sweden, and was designated professor of it in 1778, remaining in it until his death, which took place in 1808. He was a writer and practitioner of a very high order. One of the best of his pupils, Norling, took his place in 1814 ; and in 1820, by order of the Swedish Govern-

ment, he organised the Veterinary School at Stockholm, remaining director of it, as well as that of Skara, until his death in 1855. The Skara school served as a preparatory one for that of Stockholm, where the student, after a stay of two or three years, underwent examination for the degree of veterinary surgeon. At that time, as now, the students came from Sweden, Norway, and Finland, and during this period a great number of men belonging to each of these countries graduated at the Stockholm college.

In 1867, it was fixed by Royal Ordinance that before a student could enter that college he must have obtained the diploma of graduate in letters of the university. This excellent measure for the elevation of veterinary instruction was due to the initiative of Professor Landberg, and instead of diminishing the number of students, as some had predicted, it led to an increase. In requiring from candidates for admission to this school an amount of preparatory knowledge not demanded by any other veterinary school in Europe, the Swedish Government has taken care to protect the interests of its graduates and increase their income ; the consequence is that the number of graduates has correspondingly augmented in quantity and quality. The candidate, twenty or twenty-one years of age, being a graduate in letters, is received into the Veterinary School, and there he has to study for four or even six years.

The school has four professors, each with an annual salary of about £230 ; a lecturer, with a salary of £168 ; an assistant or adjoint, and a teacher of farriery. Two of the professors, and the assistant, the farriery instructor, reside in the college ; the others have a yearly lodging allowance of £28. The course of teaching at present is as follows :—

Anatomy, physiology, zoology, and pathological anatomy.—Professor Kinnberg.

Zootechny, sanitary science and police, and the ambulatory clinic.—Professor Morell.

Surgery, obstetrics, farriery and clinical surgery.—Professor Sjostedt.

Pathology, therapeutics, epizoöties, pharmacodynamics, pharmacotechny, and special clinic.—Professor Lindquist.

Botany, physics, chemistry, pharmacology and pharmacy.—Lecturer Ericsson.

The assistant aids in the clinic, and the other official instructs in farriery.

In Sweden there are thirty government veterinary surgeons, who receive an annual payment of £80, with travelling allowances.

The regiments in garrison have a regimental veterinary surgeon, who ranks as lieutenant, with a yearly pay of £170 ; and a batallion veterinary surgeon, with the rank of sub-lieutenant, who receives annually £112. Regiments of the line have regimental and squadron veterinary surgeons, the latter having the grade of non-commissioned officer, and yearly pay of £56. The number of civil and military veterinary surgeons under government is 170, and all, so far as their scientific duties are concerned, are under the direction of the medical authorities.

ON MATTERS OF AN HEREDITARY NATURE IN RELATION TO DISEASE.*

BY G. G. WHINCOP, M.R.C.V.S., NORWICH.

IN the consideration of this subject complete uniformity of opinion is hardly to be expected ; neither is it right that each should view such a matter from

* Read at the meeting of the Norfolk and Eastern Counties Veterinary Medical Association on July 8th.

one point alone, for should the theory that we base our remarks upon be a wrong one, we are all in error, and it is by the dissemination of our different ideas that results of practical benefit to us all follow. Where I fail, for I do not presume to imagine that I have been able to avoid errors of many kinds, it will be my consolation to know that better men have not always succeeded; and I claim consideration for any faults and shortcomings that this paper may contain. If no seed be sown the corn will not grow; and as we daily advance in knowledge we note many circumstances relating to various disorders that we had left unheeded before, and without doubt the best way of obtaining an extensive knowledge of disease is to pay strict attention to the causes which operate in producing results of a morbid character that go by the name of disease, and perhaps affect generations of individuals. How susceptible our profession is to improvement and investigation we all know; and how hearty co-operation amongst its members is to be desired is patent to us all. Many and great advances have been made in Veterinary education of late years, and various schools have sprung up for the teaching of the student; yet many reforms are needed before ours can be called a united profession—endowed with a unity that would be to the advantage both of ourselves and the public. We have passed through the ages of darkness and superstition, yet we wage an unequal battle against ignorance; and an extensive illegitimate practice of veterinary medicine is still carried on by empirics in nearly every district of the country.

The natural inquiry we make in subjects connected with the profession should be of a useful character, entertaining to ourselves and profitable to us in the general pursuit of our vocation. We daily and hourly come in contact with something of an interesting character, and thoughts are momentarily passing through our minds which are capable of being matured and rendered beneficial to us; and yet often no trace is left behind, for the simple reason we do not accustom ourselves to dwell earnestly on such matters, or it may be that our daily routine of practice and cares, not always of a minor kind, drive such things from us. In turning over the leaves of a favourite author—say Shakespeare—what beauties in nature we have pointed out to us which we then recollect to have seen, although not noted before, but now that our attention is drawn to them we view such subjects with interest of no common kind.

The subject of hereditary diseases and peculiarities, the result of breeding, is one of real interest to us, and as such is well worthy of study. In the lower animals, as in man, we see the great resemblance reproduction produces. Shakespeare noticed this in "Titus Andronicus"—"But when the bull and cow are both milk white they never produce a coal-black calf" (act v., scene 1). There is scarcely an organ in the body that does not give proof of this peculiarity, and hereditary tendency to disease shows itself in the transmission of maladies from parent to offspring. Reasoning from analogy in the human subject, an animal that at birth more closely resembles one of its parents, should be found more likely to develop the peculiarities of its sire or dam, as the case may be. This can only be explained on the supposition that the internal organs, like the outer ones, bear a very close resemblance. We know that we can scarcely find any organ of importance that shows any signs of diseased action, but that the same is transmissable to descent. Indeed, judging from affections of the lungs and brain in man, we can come to no other conclusion than that the inner vascular structure, the blood-vessels and nerves, partake of this peculiarity. Taking the subject literally, we can, I think, prove that no organ or texture, however remote, is exempt from its chance of hereditary taint. Every part that is capable, or rather susceptible of deviations from the natural structure, is also capable of transmission to offspring, and of producing morbid effects. One of the singular

varieties of this principle is "roaring" in the horse. The peculiar affection which gives rise to this sound has sometimes been lost in one generation and re-appeared in the next, and that, too, most strongly marked. A variety of hereditary disease, in its partial or complete limitation to the male or female of any sex, although in the horse this is not so strongly marked as in man, the operation of castration often rendering a violent and obstinate animal really docile; whilst in a mare of the same breed the natural infirmity of temper still exists. In man we see hereditary traces of disease in whole families, and inquiries instituted have traced these various peculiarities through generations—tuberculous disease of the lungs, diseases of a scrofulous nature, and gout being especially well marked. What we may avoid in the lower animals by judicious commingling of sexes, can hardly, except in special cases, be observed in ourselves. We find yet this sound advice, though the application may not at all times be a matter of so practicable a character :—

"Marry
A gentle scion to the wildest stock,
And make conceive a bark of baser kind
By bud of nobler race; this is an art
Which does mend nature, change it rather, but
The art itself is nature."

What we may expect from a theory we find strongly developed as a fact. Some entire breeds of horses stand work well, others are what horsemen term "soft," and are subject to very early decay. In ourselves, disease of some important organ may exist, and yet be held in check by carefulness and conforming to certain habits. Thus a disease that would under ordinary circumstances develop, may slumber for years, indeed may never appear at all, unless some exciting cause is brought into operation. The general law is, that all bodily peculiarities tend to become hereditary; at the same time changes induced by external causes are supposed to have no effect on the progeny—at least not in the next generation. How this would act in time it is impossible to speculate upon.

One of the most frequent causes of "roaring" in the horse is hereditary; at the same time, we understand that all the progeny of an affected stock will not of necessity become roarers. Where a predisposition exists from a cause of this kind, any influence brought to bear is often sufficient to develop the disease. As an instance, exertion in young animals, perhaps a thickening of the mucous membrane of the air-passages as a result of inflammation; constriction or perhaps ulceration of some of the cartilages; or an effusion of lymph may have formed a false membrane, or even tight reining in carriage-horses. All these may be looked upon as exceptional causes, and are often accompanied by "thick wind," in which we find dyspnœa or shortness of breath, added to which the animal usually suffers from a cough, and that, too, of a peculiar sound. "A dry roaring cough" we find in some chronic cases of roaring of years' standing, with a considerable difficulty in coughing in the animal. This is from the sensibility of the larnyx becoming diminished, and is accompanied by paralysis of the left recurrent nerve, with wasting of the muscles of the larnyx as a consequence. These horses usually "grunt," as it is termed.

As a horse advances in years, "roaring" not only becomes worse, but animals so afflicted do not thrive so well as others, and are supposed by good authorities on the matter to be most peculiarly susceptible to disease.

The horses which become "roarers" are in exactly the opposite condition to those we find affected with "broken wind." This is more prevalent in thick-bodied, very coarsely bred animals, with short necks, thick-set ponies, cobs, and trade cart-horses; whilst "roaring" is almost limited to hunters,

carriage-horses of high stature, with long necks and narrow chests. An experienced eye may almost at a glance select animals which are subject to this malady. This disease, instead of having diminished of late years, is alarmingly on the increase. It has, so to speak, been growing on our horses. Many race-horses which have won considerable stakes have been "roarers," and go eventually to the stud; the consequence is that "roaring" is propagated through entire families of race-horses. Some of their progeny, from either being too "slow" to train, or from want of staying powers, or having some infirmity to prevent their chance of winning a stake—if mares, degenerate into hacks or cheap hunters; and if stallions, are employed to cover the mares in the neighbourhood for a trifling fee to the groom—completely gratifying their owners' ambition, for these stallions, being handy, are readily made use of by inactive breeders. In this way the affection is persistently maintained. The late Professor Spooner was strongly of opinion that two-year-old racing was the exciting cause of this disease. Personally, I have no doubt he had good grounds for the opinion he had formed, matters of this kind frequently coming under his observation.

In 70 per cent. of the *post-mortem* examinations made, we find the larynx affected. This is real hereditary "roaring"; at the same time, I do not say that the recurrent nerve may not be paralysed, and wasting of the muscles be the result, without hereditary taint. "Roaring," arising from obstruction in the trachea by mechanical means, the consequence of disease, as Influenza or affections of the lungs, tumours in the nostrils, etc., may be looked upon as exceptional, although abnormal sounds are produced. Tight reining is a frequent cause, as it impedes respiration, and the horse works uncomfortably from the unnaturally curved position of the trachea. It is by no means a pleasant sight to see these wretched animals, in our great cities and towns, reined up so tightly to gratify the morbid fancy of the well-to-do public.

The next object of importance for consideration, and really the greatest of all, is the part the blood plays in the transmission of disease and defects. That a fluid ever in motion should perpetuate in the solids of the body, peculiarities in structure, cannot fail to strike our notice. This so-called vital fluid is certainly the support of life in the different structures; for mortification soon follows when the circulation is long cut off from any part. This fluid, whilst supporting the life of the solids of the body, is losing its own; and to accomplish this giving of nutrition it must have motion in a circle, in the continuance of which it is super-saturated, as it were, with fresh living powers,—having parted with its nutrition when it visited the various parts. The general way of viewing this subject, is in regarding the conditions by which this fluid is transferred from one part of the system to another, producing sometimes local excess, or even deficiency, as the case may be. That there should be a natural balance or proportion of blood to various parts of the body is certain, and that there are often deviations in circulation without producing anything really prejudicial to an animal's life, is a fact; for instance, local inflammation arising from external causes.

The definite conclusion we arrive at, is that the constitution and temperament of the offspring are very nearly allied to those of the parent, and that every disorder, whether congenital or acquired, adds more or less, in time, to the list of hereditary diseases. Not that an animal may be actually born with the diseases to which its "sire," or "dam," are liable; this in the lower animals is rarely remarked, although in the newly-born infant, the offspring of a consumptive mother, tubercles in the lungs are often present. In our practice, however, animals are usually born free from disease, but the predisposition of the young animal usually shows itself at certain ages, depending on the nature of the malady. Too early work is most influential as a predisposing cause;

where active exertion is required in a young animal, exostoses, enlarged joints, and rapid wear of the limbs is a result—splints, spavins, ringbone, curbs, dropsical condition of synovial cavities, scrofulous disease of joints, shivering, diseases of the eye—as cataract and constitutional ophthalmia—diseases of the feet generally, more especially navicular disease. In disease of the foot, hereditary taints may be strongly marked, but disease does not of necessity follow. When we get a morbid change in the structure of the foot, so that it becomes upright, the sole more concave, and the hoof generally of a "blocky" character, these are conditions which are the marked effects of the disease, and are nearly certain to manifest themselves in another generation. Again, in spavin, we see cases of hock lameness of considerable importance, yet no bony enlargement; and, on the contrary, cases daily occur where we have an enlarged hock, yet no existing lameness. That this has become a disease of an hereditary character, does not, I think, admit of a doubt. I do not know how we can better consider the hereditary peculiarities of animals than by commencing with our old domestic friend the hog—the cottager's friend, as he is sometimes termed; although, from my experience, the good old days of the farm-labourer with the pig-sty and "pightle of land" (I use a Norfolk phrase) are nearly gone, I fear, for ever.

Dr. Pritchard relates some very interesting instances of structural changes and hereditary instincts of domesticated animals. He says: "Swine transported from Europe to America, since the discovery of the Western Continent by the Spaniards in the fourteenth century, and wandering at large in the vast forests of the New World, and feeding on wild fruits, have resumed the manner and existence that belonged to the original stock. Their appearances now closely resemble the wild boar. Their ears have become erect; their heads are larger, and their forehead vaulted at the upper part; their colour has lost the variety found in the domestic breeds. The wild hogs in the American forest are uniformly black; the hogs which inhabit the Paramas bears a striking resemblance to the wild boars of France. The restoration of the original character of the wild boar in a race descended from domesticated swine, removes all reason for doubt as to the identity of the stock. The restoration of one uniform black colour, and the change of thin sparse hair and bristles for a thick fur, are facts that cannot fail to be noticed."

A very remarkable fact relative to the oxen of South America, is recorded by M. Roulin. In England the milking of cows is continued throughout the whole period from the time when they begin to bear calves until they cease to breed. This secretion of milk has become a constant function; it has been rendered such by the practice, continued through long series of generations, of continuing to draw milk long after the period it is likely to be wanted for the calf. The teats of the cow are longer in proportion, and the secretion is perpetual. In Columbia the practice of milking cows was laid aside, owing to the great extent of farms and other circumstances. In a few generations the ordinary structure of the parts and the natural state of the function have been restored, and now the secretion of milk in that country is contemporary with the actual presence of the calf. If the calf dies the milk ceases to flow. This testimony is highly important, from the proof which it affords that the permanent production of milk in the European herds of cows, is induced by an artificial habit, continued through several generations.

Again, the horses bred on the grazing-farms of the tableland of the Cordillera are carefully taught a peculiar pace, which is a sort of running amble. This is not their natural mode of progression, but they are inured to it very early, and the greatest pains are taken to prevent them moving in any other gait. In this way the acquired habit becomes a second nature. It happens occasionally that such horses become lame, and are no longer fit for use. It is

then customary to let them loose, if they be well-grown stallions, into the pasture-grounds. It is constantly observed that these horses become the sires of a race to which the ambling pace is natural, and requires no teaching. The fact is so well known, that such colts have received the special name of "Aquillas."

The habit of the "setter dog"—his stopping, crouching, and backing in the pursuit of game, is familiar to us. This, by constant teaching, has become hereditary to such an extent that the first time a well-bred young dog is taken in the field, it is nothing uncommon, as soon as he gets on the scent, for him to stand and remain immovable, till instructed to proceed. This can be nothing but hereditary idiosyncrasy, and a remarkable and interesting argument in its favour. Speaking of dogs, Dr. Pritchard relates that the breed of that animal found on the banks of the river Madeline, and which are employed in hunting the Beccari—a small wild hog—are attached to each other and will hunt together, but the moment a strange dog comes in their way, they will attack the same with ungovernable fury, and notwithstanding the efforts of the hunter, who at other times has perfect and complete control over them, they will immediately destroy any dog belonging to an alien race.

And the sheep, which we can only look upon as one of our oldest domesticated animals, exhibits a great variety of form, new breeds being frequently produced in different counties, in which particular qualities predominate, according to the preference and judgment of the breeder. This is effected partly by crossing or intermixing races already well known, and in part also by selecting an individual animal from the stock, in whom some particular qualities are more strongly marked than in the generality of the same breed. In these instances, the natural or congenital variety or particular excellence in form that an animal displays, most likely for the first time, becomes perpetuated by hereditary transmission, which is a law in the animal economy.

The question of breeding animals demands no little attention from us, whether we breed a horse for the chase, for commerce, or for agricultural purposes. The horse-shows held in nearly every county in England have done good work, by encouraging a system of rivalry or, more properly, emulation amongst gentlemen who have both the will and means to produce good animals of every class. I have known several really unsound animals to travel in this vicinity. One of the worst "roarers" I ever heard was a very favourite animal amongst farmers for years; they patronised him extensively, because his stock was large, with plenty of bone and substance. Certainly we have as many roarers in this county as one would care to meet with; and until the agricultural community can be persuaded of the baneful effects of animals of this kind, we are always certain to have a good number. There are hundreds of individuals who are continually increasing the number of horses, without any idea of the qualities the sire or dam should possess. The result is an increase of animals that are of no real value. Some will not pay the price for first-class stallions; and many more have become tired of paying for the use of these animals, with such an uncertain result; while if we take into consideration how severely these travelling stallions are worked in the season, we can hardly wonder at the defects in the progeny. The horse becomes exhausted from too frequent copulation and constant travelling; the consequence is that the provisions of nature are inadequate to provide for a process so debilitating, and the animals become uncertain foal-getters, or they produce only weedy animals. The greater the superiority of the male over the female, the more will the produce partake of his character. This, as we know, applies not only to the horse, but to other animals, oxen and sheep coming more particularly under our notice. This we acknowledge in England as the most powerful means of preserving or regenerating stock. I think a great argument in favour of the sire in having a more powerful

effect than the dam is, that if a she-ass is covered by a horse, the offspring is a mule that more closely resembles the horse rather than the ass in shape, but in height it is more like the latter ; while a mare covered by an ass gives the proper mule, which is more like its sire in form and temper, and the dam in height and size. Food and climate may modify these results, but will not destroy the principle. The whole secret of our success in breeding is the well-combined introduction of original blood from the best sources, and hence our superiority.

That good horses are always worth money is a fact—that is, horses with blood, muscle, and high action ; but the fluctuation in the price of horses depending on causes wholly beyond the power of the breeder, is a curious fact. A few years ago, horses were scarce, but now, owing I think to large imports, the country is full of them, and middle-class horses sell at a price that cannot recuperate the breeder.

What we require is plenty of bone, strength, and robustness. Our aim must be to breed horses of size and power. In this part of England we are well favoured with marshes of luxuriant herbage, well calculated to promote the necessary building up of the system ; and here in the eastern counties, Norfolk has always held its place at agricultural gatherings. In conclusion I can only lament the present agricultural depression. Farmers are now passing through very trying and anxious times, and must endeavour by judicious breeding to counterbalance the low price of general produce. These bad times for farmers, as they are called, affect us also indirectly. Agricultural and veterinary science are related to each other so closely.

The veterinary profession has had a long up-hill fight for its existence. A man can never war with so contemptible, and yet so powerful a foe as ignorance. As a profession we have grappled with and routed superstition, and prejudices of many kinds are fast giving way.

PATHOLOGICAL ANATOMY OF RABIES AND HYDROPHOBIA.

KOLESSNIKOFF (in the *Centralblatt für Chirurgie*) examined the bodies of two pregnant bitches which had been rabid. He found a parenchymatous inflammation of the uterine mucous membrane and its glands. From this tissue the inflammation had invaded the placenta, then the internal organs of the fœtuses—the liver, cells of the pulmonary alveoli, lymphatic corpuscles of the spleen, and the glands of the mucous membrane of the stomach and intestines.

The muscles were normal, but the kidneys exhibited the first stage of the parenchymatous Nephritis which, according to Rudnew, is constantly met with in rabid dogs.

Botkin (*Rec. des Sciences Méd. en France et à l'Etranger*) describes the lesions found in the brain and cardiac ganglia of a woman, thirty-two years of age, who was bitten in the lower lip by a dog on July 9, 1875, and died on September 23, after two-and-a-half days' illness. On examining the nervous centres, the following changes were noted :—Some cells of the medulla oblongata were turbid, and their contours were indefinite ; in the interstitial tissue of the brain there was a great quantity of white corpuscles in the perivascular sheaths or their vicinity. Some of these corpuscles were situated in the pericellular spaces, and they were found even in the protoplasm of the cells. There was dilatation of the blood-vessels, which were filled with corpuscles ; but the most interesting discovery, in the estimation of Botkin, consisted in the presence of a brilliant and strongly-refracting substance, collected principally in the perivascular spaces, and especially in the superficial layers of the cerebral hemispheres. This substance was in places agglomerated around

the vessels in such abundance that the latter appeared to be obliterated or strangulated. In other places they were disposed somewhat regularly around the blood-vessels, so as to appear like epithelium. Resisting the action of staining fluids, they remained insoluble in acids and alkalies.

In the ganglia of the heart the following lesions were observed: Swelling of the endothelium lining the sheaths of the nerve-cells, and in the interior of these cells, as well as in the interstitial tissue, round elements the size of white corpuscles. The nerve-cells were turbid, so that it was impossible to perceive the nucleus. An alteration which was always present consisted in the nerve-cells never completely filling their sheath, but remaining separated from it by a space which only traversed the prolongations of these cells.

The author calls attention to the fact that Lubimoff had pointed out an identical appearance of the cervical and sympathetic ganglia in a case of Œdema. It therefore appeared to him to be necessary to discover if, in the present instance, there had not been an infiltration which dilated the sheath of the cell, or rather a retraction of the cellular protoplasm. Micrometric measurements, however, permitted him to ascertain that the cell had preserved its normal dimensions, and that the sheath was dilated—a circumstance explained by the laxity of the tissue enveloping the ganglia of the heart, and the great vascularity everywhere around them.

Monin, in the *Archiv für Veterinarmedicin* of St. Petersburg, has made eighteen observations on rabid dogs, and gives the following propositions:

1. Rabies in the dog is a febrile disease, the temperature rising to 39° and 40°. Before death it often falls to 26° by a regular decrease. Death always occurs at the moment when the lowest temperature is reached.

2. The density of the urine and its richness in urea are at first increased; they diminish a short time before death, while, on the contrary, the proportion of salts, and particularly phosphates, and sulphates, is greater. The urine contains albumen and the colouring matter of the bile.

Proceedings of Veterinary Medical Societies, etc.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this association was held at the Medical Institute, Hope Street, on August 15th, 1879, JOSEPH WELSBY, Esq., President, in the chair. The following gentlemen were present: Messrs. Morgan, Reynolds, Elam, Simpson, and Stevenson, of Liverpool; Professor Walley, Veterinary College, Edinburgh; Dr. Greenway, West Derby; Messrs. T. Greaves, Manchester; B. Kettle, Market Drayton; A. H. Darwell, Northwich; J. P. Young, Clitheroe; W. G Dixon and J. S. Menzies, St. Helen's; E. Langford and John Pilkington, Veterinary Students; a friend, and the Secretary. Letters of apology were received from a number of members and gentlemen who regretted their inability to be present, owing to some other meetings of a public character being held on the same date.

The minutes of the previous meeting were read and confirmed. Mr. T. E. J. Lloyd, Chester, was elected a member of the Association.

A letter from the Secretary of the Medical Institute, relative to a proposed donation by the Association to one of the medical charities of Liverpool, was read and discussed, when it was unanimously agreed to send a donation to the Children's Infirmary of Liverpool.

Professor WALLEY then read a paper on "Ammonia: its Uses in Practice,

with a consideration of the Stimulative System in the Treatment of Disease."*

Mr. THOMAS GREAVES, in opening the discussion, said their thanks were due to Professor Walley for bringing such a very interesting and practical paper before them. Ammonia had been a great favourite with him ever since he entered the profession, and he did not consider that Professor Walley had over-estimated its therapeutical value in the least, notwithstanding the very high praise which he had bestowed upon it. Liq. ammonia fort. had formed one of the ingredients of his colic draught for forty-five years, and he considered that with the carbonate of ammonia one can accomplish everything that may be effected with calomel: viz., increased action of the secretory organs, and even purging, without producing that nausea which accompanies the administration of that drug. In low fevers in horses and cattle, carbonate of ammonia is of great value, and if there is a fœtid condition of the mouth accompanying any disease, this medicine, given in solution, will remove the condition immediately. He had observed, however, that after its administration for some time the venous blood became darker, and in some cases animals died from apparent syncope—in his opinion, by this darkening and thickening of the blood following the administration of carbonate of ammonia.

In making a *post-mortem* examination of such cases, the arteries were found to be full of black blood. He would like to hear Professor Walley's opinion on that point.

Mr. MORGAN said that he used to have great faith in external stimulation, but he did not rely on it so much now, especially in Pleurisy and Pneumonia. He did not approve of applying mustard even in those cases, and he could not see the force of the Professor's recommendation to bleed and apply external stimulants during a crisis in such cases. As to giving liq. ammonia fort. in a colic draught, it required so much care in measuring the dose, and having it properly diluted to prevent excoriation of the mouth, that it was a very dangerous remedy for ordinary use. He preferred the spt. ammon. arom. In cattle practice, good whisky was an excellent stimulant, and the Professor would find that in Scotland it was generally very handy. He concluded by thanking the Professor for his very practical and exhaustive paper.

Mr. STEVENSON said that while he could not but express his admiration of the paper which they had heard, yet he could not agree with the Professor in recommending that ammonia be given along with alcohol, as their physiological actions are quite opposed to each other—ammonia being given as an antidote for an over-dose of alcohol.

Mr. T. GREAVES, in explanation of Mr. Morgan's remarks, said that he had experienced no bad results from the administration of liq. ammonia fort.; he administered it in half-drachm doses in a pint of water, and if that dose did not accomplish the desired effect he increased it from half to double that quantity. When you excoriate the mouth and thus stimulate the buccal and entire mucous membrame, your patient generally does well. If you mix ammonia in linseed oil it does not produce the same beneficial effects. In Parturient Apoplexy he considered that the carbonate of ammonia was a better stimulant than whisky—he had given as much as two ounces every hour for six hours to a cow.

Dr. GREENWAY referred to the tendency of the human mind to rebound from one extreme to another, and in nothing was this more manifest than in the history of medicine. Fifty or sixty years ago phlebotomy was almost

* This Paper appears as an original communication in the present issue of the Journal.

universally resorted to for every kind and character of disease, and at the present time it was just as universally abandoned. He considered this was a great mistake, and related the history of a case of Bronchitis which came under his care when a young practitioner, which convinced him that phlebotomy was of great value when judiciously resorted to. In this case expectorants were tried, the inhalation of steam and the stimulative system of treatment adopted, but with no beneficial results, he then determined to try phlebotomy, followed by the internal administration of ammonia, which produced immediate beneficial results, the patient finally recovering. The blood when first drawn was very thick and syrupy, but it gradually became brighter. When the bronchial tubes are blocked up with gelatinous mucus, the blood becomes carbonised ; no air can reach it, and internal congestion follows. This condition is relieved by phlebotomy, the heart is assisted, the blood becomes arterialized, the lungs relieved, and the viscid mucus is expelled. In reference to ammonia as a general stimulant, he considered that in human practice they had a better stimulant than carbonate of ammonia in sulphuric ether. Alcohol dried up the secretions, but ether stimulated the secretory organs, even better than ammonia, and in some forms of disease of the kidney—such as the "white fatty degeneration" in which the urea in the blood became decomposed into carbonate of ammonia in the kidney, the administration of carbonate of ammonia is inadmissable.

Mr. WELSBY, the President, referred in appreciative terms to the excellence of Professor Walley's paper, and said that, although he could quite understand the benefit arising from the combined effects of phlebotomy and ammonia, he could not fully see the advisability of combining two such antagonistic remedies as aconite and ammonia recommended by Professor Walley in his paper.

Mr. ELAM said that it was fourteen years since he had discarded alcohol in favour of ammonia ; in Parturient Apoplexy he had found ammon. carb. an invaluable remedy. He related several cases illustrative of its beneficial effects in this disease. He gave as much as four ounces of the carbonate of ammonia in one draught to a cow before going down. There was no risk in cattle of injuring the buccal membrane. Referring to Mr. Morgan's remarks on external stimulation, he said that in acute Pleurisy and pneumonia he placed great reliance on the external application of mustard in every case. He had never given aconite with ammonia, but he failed to see any reason why the action of aconite should be different when combined with carbonate of ammonia in the solid form, from its action when administered with the same medicine in the liquid form. In torpidity of the bowels he had found that a ball composed of aloes ʒj, ammonia carbonate ʒjj, and repeated for several mornings, acted very much more satisfactorily than the ordinary physic ball.

Mr. B. KETTLE, in a humorous speech, related the history of a case of inflammation of the bowels in a horse, which very forcibly pointed to the beneficial effects of large doses of liq. ammon. fort. At first he administered some appropriate medicine, and desired to be informed in three hours how the horse was. A messenger came and reported that the animal was no better. He then prepared some ammonia liniment, to be applied to the abdomen, and a powder which was to be administered in a pint of warm water, stating that he would see him soon after. When he arrived, he found the horse standing with his tongue hanging out its full length from his mouth and completely stripped of its mucous covering ; the whole of the buccal membrane was also removed. On making inquiries as to how this was brought about, he ascertained that the animal had received the ammonia liniment as a draught, and the powder had been rubbed on his belly. The pain ceased immediately after the draught was given. He

(Mr. Kettle) was at first very much alarmed at the probable result; however, the case terminated favourably. As to the beneficial effects of ammonia in Parturient Apoplexy, he had given both ammonia and whisky, separate and combined, but under either mode of treatment he was sorry to report a large percentage of deaths.

Mr. WELSBY, referring to Parturient Apoplexy, said that he had been induced to try *ergot*. In one case he gave two drachms of strong solution in half-a-pint of gruel; the animal was almost comatose; half-an-hour afterwards she became very excited—almost mad; she continued in that state for about two hours, after which she became quiet, and finally recovered. He treated other two cases in the same manner, but both died. He then treated other two cases by the hypodermic injection of *ergot*, one of which recovered. Reasoning from his experience, and the physiological action of *ergot*, he was inclined to recommend it for further trial. He was also very favourably impressed with the benefits likely to be derived from the intra-venous injection of ammonia in this disease.

Mr. REYNOLDS expressed his regret that, owing to some other public meetings, Professor Walley had not a better audience to listen to his very excellent paper. In regard to the intra-venous injection of ammonia, he should like Professor Walley to enlighten them a little more in detail as to the dose, the strength of the solution, and the general mode of procedure; also, if he thought that in cases of blood-poisoning from wounds in the feet of horses, that the intra-venous injection of ammonia would be beneficial.

Mr. GREAVES said that he did not think that in those foot cases death was caused by absorption of matter or blood-poisoning; but that it was due to chronic disease of the lungs, or other internal organs, which existed concurrently with the injuries to the feet. In regard to the beneficial effects of bleeding, he related the history of a case of chest influenza in a horse. This animal had been ill for five days; had eaten nothing for three days; pulse 96, etc. The late Mr. John Lawson saw the case with him. Mr. Greaves recommended bleeding, but he strongly objected to it. The horse made no improvement, however, and on the following day he was bled, six quarts being abstracted. When Mr. Lawson was told what had been done, he said the patient was almost certain to die. The horse was visited six hours later, and he looked livelier; and in other six hours his pulse was down to 86, after which he gradually improved and finally recovered. Phlebotomy relieved the congestion that existed somewhere, and gave nature a chance. But while he admitted that a great change had taken place in our mode of treating diseases, he was also of opinion that the character of the diseases themselves had changed.

After some remarks from the SECRETARY—who had expressed the hope that Prof. Walley would publish his paper, the President called on the Professor to reply.

Professor WALLEY said that he was obliged to the President for giving him the opportunity of coming to read a paper, and to the members for the appreciative reception they had given it. He then referred to the various criticisms and questions of the members. As to the best mode of administering ammonia or its carbonate, he preferred giving it in solution—when this could be done conveniently—but it must be diluted so largely, that it is difficult to administer in some cases. As to the reason why ammonia and aconite connot be administered together in solution, it is because the action of aconite becomes thereby increased to such a degree that symptoms of poisoning manifest themselves almost before the medicine is swallowed.

It is the same with potass and aconite in solution. These agents seem to favour the absorption of the aconite. As to animals dying with their arteries full of black blood after the continued use of ammonia, referred to by Mr. Greaves,

the continued use of ammonia would produce fluidity of the blood, and in large doses solution of the hæmoglobuline, and thus prevent the oxidation of the blood, but he was strongly of opinion that the character of the blood in these cases was due to the disease rather than to the administration of ammonia. In regard to the benefit of external stimulation referred to by Mr. Mr. Morgan, people become disgusted by seeing stimulation over-done, some practitioners persisting in applying irritants during the whole couse of the disease ; but in the early stages, or at a turning point of the disease, external stimulation is of decided benefit—the nerve centres being stimulated. The Professor here related the history of several cases in which marked benefit was derived from abstracting blood, and following up that by internal and external stimulation. As to the apparent contradiction in combining alcohol with ammonia, in many cases when two agents are given, which individually have an opposite effect, there is a beneficial result—such as in the combination of *opium* and *belladonna*. Ammonia is a respiratory stimulant, The same remarks apply to the combining of ammonia with aconite, Aconite reduces the temperature, while alcohol is more a cardiac stimulant, having a powerful sedative effect on the heart, while ammonia stimulated the respiratory functions.

He quite agreed with Dr. Greenway, that sulphuric ether was particularly useful in inflammation of the lungs ; but it was inadmissible in cattle practice generally, from the odour, etc., left in the meat should the animal require to be killed. On the other hand, disease of the kidneys was not so common among the lower animals as in man, and consequently there was not the same objection to the administration of ammonia to them. As to the doses and dilution of ammonia for the horse, he gave one half-drachm of liq. ammon. fort. in a pint of water, or ammon. carb. ʒj. aqua Oss. For cattle, from 3 to 4 ounces of the ammon. carb. may be given without any risk of excoriating the mouth.

In giving liq. ammonia fort. for colic, one may almost judge of its beneficial action by its effect on the mucous membrane of the mouth. He never doubted a favourable termination when the mouth was excoriated by the medicine. Ergot of rye is used in parturient convulsions, and might be recommended for trial in Parturient Apoplexy. It acts on the brain and spinal cord. As to the method of intra-venous injections : first put the finger on the vein, but not too firmly ; or insert the needle in it and draw the piston ; the blood will show that the vessel is penetrated. From ʒss. to ʒj. of liq. ammon. fort. may be injected into the circulation ; it need not be much diluted. The characters and types of diseases change—they assume a different character in one year from that which they bear in another. He did not, however, think that this was due to altered feeding, etc., so much as to the different constituents in the same kind of food—due to our altered mode of cropping, and to our changed system of agriculture generally.

Mr. HUTCHEON proposed, and Mr. ELAM seconded, "That Professor Walley be requested to publish his paper." This was carried unanimously. Professor Walley having agreed to comply with the request, a cordial vote of thanks, on the motion of the President, was accorded. A vote of thanks to the President closed the meeting. DUNCAN HUTCHEON, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE first quarterly meeting of this Association was held in the Douglas Hotel, Newcastle-on-Tyne, on Friday, August 29th, Mr. D. Dudgeon, the President, in the chair. The following members were present :—viz., Messrs. W. J. Mulvey, H. Hunter, G. Elphick, J. Corbett, A. L. Butters, A. Hunter, D. Macgregor, W. Wheatley, M. Hedley, W. S. Pringle, C. Stephenson, J.

Anderson, J. Gofton, and the Secretary. Mr. W. Williams, jun., was present as a visitor. Letters of apology for non-attendance were received from Professors Williams and Pritchard, and Mr. J. Malcolm.

The Committee elected for the revision of the rules presented its report, which with a few alterations was adopted.

Mr. G. ELPHICK then read the following paper on "Some of the Diseases of the Bowels as Affecting the Horse":—

Mr. PRESIDENT AND GENTLEMEN,—Having been solicited by our worthy Secretary at the eleventh hour to read a paper, I have selected to bring before your notice some of the diseases of the bowels as affecting the horse.

I should have liked to have given you something perhaps more interesting, but the notice I received being so short and time limited, I took the liberty of thinking that one and all of you would kindly assist me in my undertaking.

You will, I am sure, agree with me that these are diseases to which the lower animals are very subject, especially the horse, but not so common now as they were in former days, thanks to science—I think I may justly say veterinary science—also to the better management and feeding of horses. I do not intend to give you an elaborate paper, neither shall I give you all the diseases to which the bowels are liable, but confine myself to the most important ones—viz., Indigestion, Impaction of the Stomach, Constipation and Obstruction, Spasmodic and Flatulent Colic.

These diseases occur most frequently during the winter months, and at the change of seasons, and are generally the results of errors in feeding. Horses are, as a rule, best kept in health when fed upon food requiring thorough mastication ; we find when horses are properly fed the stomach seldom suffers from disease. Give a hungry horse a feed of cooked meal or a mash, which is eaten very heartily without mastication, and we get an acute case of what is generally called Gripes. I have no doubt it is badly griped, and unless it gets immediate relief the case terminates fatally from a ruptured stomach. Doubtless many of us have been called in to make *post-mortems* upon horses that have been found dead in the morning, which were left in perfect health the previous night, and upon inquiry the horse has been a long journey, got home late, had a mash, and was left for the night. On making a *post-mortem*, the stomach is found ruptured and full of non-masticated food. In many of these cases, where no *post-mortems* are made, the poor animal gets the credit of having hanged itself.

The first disease to which I shall call your attention is

Indigestion.

This arises from various causes, such as the process of dentition, diseases of the teeth, ravenous feeding, improper food, or food given at improper intervals, or from some constitutional predisposition. In young animals it is generally caused by removal from the dam at too early an age, draughts of cold milk, or sucking when the dam is heated by working too soon after the birth of the offspring.

Symptoms.—Loss of appetite, or capriciousness and depravity of it, the animal eating at irregular intervals, or having a desire to eat filth ; the tongue is white and pasty, with a bad smell; often a dry cough, hide-bound, a dry scurfy skin ; stretches out the nose, and retracts the upper lips ; irregularity of the bowels, and occasionally pawing with one or both fore-feet. If caused by imperfectly masticated food, the oats and hay, or whatever the animal is fed upon, will be found in the fæces. The fæces often resemble the colour of the food. In young animals the above symptoms are generally present associated with Diarrhœa ; and if fed on milk the fæces often resemble it in

colour and consistency, and are generally fœtid. Should these symptoms in aged animals have spread over a considerable period of time, Diabetes often sets in ; colicky pains may also be present in some cases, especially a short time after being fed.

Treatment.—If possible find out the cause and remove it, this generally in the earlier stages effecting a cure ; if due to the process of dentition, the presence of unshed temporary teeth, or any irregularity of the permanent ones, should be treated by the ordinary method ; if from improper feeding or bad food, a complete change of diet is generally all that is required, care being taken to give food easily digested and good. In some cases where the cause in operation cannot be detected, I would recommend an alteration in the diet ; in all cases where Diarrhœa or Constipation is present, it will be advisable to give a mild aperient. I prefer linseed oil before any other ; aloes, I think, are too irritating, frequently causing colicky pains and super-purgation, which leaves the animal very weak, often taking months for it to regain its former strength. After the laxative has operated, or if the state of the bowels requires no opening medicine, I find alkalies alone, or combined with vegetable tonics, most beneficial, improving the appetite, counteracting the acidity and strengthening the gastric apparatus ; in some cases the alkaline treatment fails, when I have found the use of nitro-muriatic acid proving beneficial. I have also had good results from allowing the animal to eat soil, such as grass sods, or when at exercise allow it to help itself, which it does greedily. In foals and calves I find carbonate of magnesia combined with stomachics most useful ; a piece of chalk or rock salt placed within their reach often does good, in fact they should never be without one or the other. In indigestion occurring in the winter and when the hair is long, clipping frequently proves beneficial, restoring health in a few days after every other remedy has failed. In all cases, dieting, pure air, gentle exercise and good grooming are to be strictly looked after, even in health.

Impaction of the Stomach

is caused by food too abundant in quantity or greedily swallowed and imperfectly masticated ; this is often seen where horses are fed on cooked food. Deaths from this cause are very common ; some foods are also very dangerous for the horse, such as wheat and barley, causing deranged stomachs, Laminitis, and death, and should not be given as an article of diet. I have also seen bran, when given in large quantities, prove fatal, causing Impaction and Rupture.

Symptoms.—Flow of saliva from the mouth, nostrils dilated, anxious countenance, eructation of gas, occasional attempts at vomition, fulness of the abdomen, colicky pains, pawing with the fore-feet, keeping the head pressed into a corner, or if in a stall, under the manger, partial sweats, afraid to lie down, and when down lies but a short time. In the latter stages we have the peculiar catching breathing, discharge from the nostrils of the medicines we have attempted to give, walking round the box until the last, when everything seems to give way, and the animal falls to rise no more from ruptured stomach.

Treatment is in most cases not very successful, as we are seldom called in during the earlier stages. I have had most success with linseed oil, ammonia or turpentine, and enemas, care being taken not to allow the animal to lie down suddenly. I have also had good results from a little gentle exercise, and if much pain was present gave the tincture or extract of belladonna by itself, or combined with opium.

I shall consider the next two diseases together as they are closely allied. viz. :—

generally affect the large intestines, and may be looked upon more as symptoms of than diseases, and result from debility or paralysis of some portion of the intestines. Animals over-abundantly fed, or kept upon food containing too much woody fibre, are more liable to suffer. In some cases the bowels are naturally torpid.

Symptoms.—When arising from paralysis, one diagnostic symptom is absence of intestinal murmurs ; and if affecting the large intestines, a dilated non-contractile condition of the rectum when the hand is introduced. If due to impaction from errors of feeding there is general abdominal pain, the animal often stretching itself out in a similiar position to that seen in the act of urination, paddling with the hind-feet, whisking the tail, and keeping it close between the hind-feet ; at times it will stand for a considerable period apparently easy, at other times lying stretched out for twenty minutes or even half-an-hour, and occasionally looking back at its flanks. There is a tendency to resist by straining the introduction of the hand and injections into the rectum, also enlargement and distension of the abdomen ; in many cases impacted masses can be felt by the hand when examining *per rectum*, and when the hand is withdrawn it is generally covered with mucus.

Treatment.—Constipation, when arising from paralysis of the bowels, is best overcome by stimulants and nervine tonics, with an occasional dose of opening medicine, and by the administration of enemas ; if from a torpid state of the bowels, alkalies are to be given, with occasional cold bran or linseed mashes, and sparingly supplied with hay.

I think, gentlemen, you'll agree with me that Impaction or Obstruction of the bowels requires very careful treatment, and a large amount of patience. We are very anxious that our patients should recover as soon as possible, and the owners are generally very fidgety, consequently we are apt to give too much medicine, and instead of our patients dying of the disease, they die of the treatment. After giving a certain amount of medicine we ought to leave the rest to nature. As a rule they are lingering cases, often extending over a period of five or six days—one case which I remember lasted eleven days, and recovered. The great danger to be guarded against is Muco-enteritis, and Rupture of the bowels.

In these cases I have had the greatest success from linseed oil—if much pain was present I have given opium or belladonna, or both together ; also subcutaneous injections of morphia or atropia, or the two combined. I must say I am very partial to belladonna in these cases, as it is a laxative, and relieves pain and muscular contraction. Opium is too constipating, and I think often counteracts the effects of any opening medicine that is given. I have no doubt in my own mind that when the bowel becomes impacted, there is a tendency to contraction of the muscular coat of the intestines.

I remember a case of obstructed bowel which terminated fatally from a huge calculus in the rectum. In this case, no matter what I gave the animal, it got no relief until I gave a large dose (1 oz.) of the extract of belladonna. It seemed to act like a charm, the pain subsided, and I heard what I like most to hear in these cases, intestinal rumblings, and the animal passed a large quantity of gas. This state of affairs only lasted the time the animal was under the influence of the drug. I feel confident if this had been an ordinary case of impacted bowel the animal would have recovered.

In these cases, and I think I may safely say in all cases where the bowels are affected, aloes should seldom or never be given ; undoubtedly aloes in a ball is the most convenient way of administering opening medicine, and in this form is easiest given. The great objection I have to aloes is its tendency to irritation and exciting the bowels to undue action. If opening medicine is

necessary linseed oil is to be preferred. Perhaps some of you will say linseed oil is very difficult to give to some horses, and that you cannot determine the quantity they have got. With linseed oil I think you need not be particular to half-a-pint how much you give; I have given it in large quantities—in some cases they have almost passed pure oil without any injurious effects. Enemas of warm water should be frequently administered. Kneading the bowels and back-raking are very beneficial; I am confident I have saved many a life by doing this.

Colic

is of two kinds, Spasmodic and Flatulent. They are diseases which arise from many causes, such as improper food, change of diet, physic when the animal has not been properly prepared, a sudden chill caused by allowing the animal when heated to stand in a draught, getting the legs and belly wet during the winter months, exhaustion, particularly if associated with long fasting, and cold water if given to the animal when sweating after a long journey. Flatulent Colic is generally due to food which easily undergoes fermentation, such as boiled corn and green food, the latter especially if cut damp, tied up in bundles and allowed to remain in the stable until wanted; it then becomes heated, often so hot that you can hardly bear your hand in it. I have seen many fatal cases from this cause. In one case the horse had given to it half a bundle of grass which had lain tied up since the previous day. It hadn't eaten the half before it was attacked with acute Flatulency, and died within twenty minutes from taking the first bite. I believe the *post-mortem* examination showed ruptured stomach. Symptoms of Spasmodic Colic are sudden pain, endeavours to kick the belly, looks round at the flanks, and in some cases attempts to bite its sides, suddenly falls down, rolls, throws itself violently about, gets up and lies down rapidly and frequently; whilst the spasm lasts, the breathing is hurried and the pulse rises often to a hundred or more, but when it passes away both breathing and pulse fall to their natural standard. The fæces are sometimes hard sometimes soft, and generally passed at the beginning of the attack; the urine is passed in small quantities, or there are frequent ineffectual attempts at urination. These symptoms, unless relieved, terminate in Enteritis.

Treatment.—Knowing that the pain and spasms are due to the presence of some irritant, the removal of this will effect a cure. This is best done by administering opening medicine combined with sedatives; when there is acute pain opiates are to be given, and they may be given in large doses; opium is generally used and is best given in a ball. In my opinion ordinary doses of opium in acute cases like these are like pouring water on a duck's back; I have given large doses with the greatest success, one large dose at the beginning is, I think, much better than small doses often repeated, because the longer the pain and spasm lasts there is a greater tendency to the case terminating in inflammation. The large dose generally acts immediately, throws the bowels into a state of collapse, relieves the pain and spasm, the poor animal lies down and gets a comfortable sleep, often sleeping for four or five hours, and waking up all right.

In one case I gave as much as ten drachms of powdered opium in twenty minutes. I gave it in two balls, the first containing six drachms, and the animal being no better, in twenty minutes, the pain being very acute, I gave the second ball, containing four drachms. Even this did not put it to sleep, simply relieved the pain, the animal gradually recovered and apparently suffered no ill effects from the large dose. In all cases, after the acute pain has passed, I usually give linseed oil to remove any irritant and to counteract the constipating effects of the opium. In the milder attacks I have had very good results from giving chlorodyne (℥iv. to ℥viii.) made into a ball with soda

bicarb. ; of the different kinds of chlorodyne, I prefer Hewlett's, it being more uniform. Those gentlemen who have not tried it I would strongly recommend them to do so. Warm water enemas should be repeatedly administered, and hot fomentations applied to the abdomen. In all cases the bladder should be examined, and if full, the catheter passed. In Flatulent Colic the pain is not so acute but more constant, the abdomen is more or less distended, breathing difficult, nostrils dilated, pulse quick and feeble, walking round and round the box, frequent attempts to lie down, and when the animal does lie he does so cautiously, seldom or never rolls, and gets up immediately. In the latter stages the extremities become cold, there is more or less delirium, twitching of the muscles, reeling to and fro, and if not relieved death generally ensues from rupture of some portion of the intestines.

Treatment.—I have been most successful with linseed oil, turpentine or ammonia, enemas, and hot fomentations to the abdomen. Kneading the bowels does good and should always be resorted to. Some practitioners recommend puncturing the colon, especially our friends across the Atlantic ; this operation I have never tried.

With this, gentlemen, I ought to finish, but as many diseases of the bowels terminate in inflammation, I will with your kind permission give you my ideas upon Enteritis, concerning which, I have no doubt, there will be various opinions. Undoubtedly we often have cases of inflammation of the bowels, which I consider only secondary. A great many acute cases of Colic are often said to be Enteritis which, unless immediately relieved, terminate in inflammation. In my opinion, when inflammation sets in it always terminates fatally. I am open to correction, and will gladly admit my error if any gentleman will prove to me that these cases are curable. I have no doubt there are many here who have thought (if I may be so bold to say so) that they have treated such cases successfully. I have no doubt these successful cases have been very acute cases of Colic, and have only pulled through it by the skin of their teeth. Fortunately for the animals, we cannot get inside to see the exact state of affairs, but when they die we always find the bowels in an awful state, black and congested, and the exudation so great that it is often half-an-inch or more in thickness. These are the reasons why I contend Enteritis is incurable ; in all cases of inflammation we get congestion and exudation, consequently, to a certain extent, loss of vitality of the part or parts affected, gangrene and sloughing setting in so rapidly that it carries the patients off before nature gets a chance at recovery.

With these remarks I will conclude. This paper contains many imperfections which I hope, gentlemen, you will kindly overlook. I trust I have said that which will provoke discussion and tend to the establishment of truth. I have stated freely and with little regard for the opinion of others my own views of the subject. We are all prone to err, and if it can be proved that I am on my part mistaken, I shall not be loth to acknowledge it, for we lose nothing in eliciting truth.

A very animated discussion followed the reading of the paper, as to whether linseed oil or aloes was the best aperient to give in cases of diseases of the bowels requiring opening medicine, in which Messrs. H. Hunter, Macgregor, A. L. Butters, Corbett, A. Hunter, Anderson, Hedley, Mulvey, Stephenson, and the president took part.

A vote of thanks having been proposed and carried unanimously to Mr. Elphick for reading his paper, and to the President, the meeting terminated.

G. R. DUDGEON, *Hon. Sec.*

Army Veterinary Department.

THE *Army and Navy Gazette* announces that the new Veterinary Warrant is now before the Treasury, but that it is to be feared the document, when it makes its appearance, will be disappointing to the members of the Department, great care having been taken by the officials in Downing Street to curtail expenses—the War Office having experienced considerable difficulty in obtaining money to enable it to remove the anomalies, the existence of which constituted the principal cause of complaint against the previous Warrant.

It is also announced that a number of veterinary surgeons heading the list of the 1st Class, have made known their intention of retiring from the service on completing twenty-five years' service ; and on the understanding that they will withdraw, they have been permitted to remain on home service instead of taking their tour of India. The Principal Veterinary Surgeon is most anxious to open a prospect to the younger members of his department, and to allow no such thing as favouritism to exist at Winchester House.

Obituary.

THE death is announced of Veterinary Surgeon W. F. Blanshard from Cholera, on the 16th August, while on duty with the D-2 Battery, Royal Artillery, in Afghanistan. Deceased graduated in 1879, and obtained his commission in the army on August 2nd, 1871 ; he had served with the Kandahar field-force in the recent operations.

The Registrar of the Royal College reports the demise of Mr. J. Gillespie, late of Alloa, who graduated in 1869 ; and Mr. W. Shaw, of Stranraer and New York, a graduate of 1876.

Notes and News.

RABIES IN DOGS.—A contribution to our knowledge of this disorder has been recently made, says the *Comptes Rendus*, by M. Galtier. The most important of the conclusions which he draws from his experiments, is that the saliva of a mad dog, obtained from the living animal and kept in water, continues virulent for five, fourteen, and even twenty-four hours afterwards. This fact has consequences of which everybody should be aware. Thus it seems that the water of a vessel in which a mad dog may have dropped some of its saliva in attempting to drink, should be considered virulent during at least twenty-four hours; and next, that as the saliva of a mad dog which has succumbed to the malady, or has been killed, does not lose its properties through mere cooling of the body, it is important, in examining the cavities of the mouth and throat after death, to guard against the possible danger of inoculation. M. Galtier tested rabbits with regard to Rabies, and found it transmissible to them from the dog ; also, the rabbits' Rabies from them to animals of the same species. The chief symptoms are paralysis and convulsions. The animal may live from a few hours to four days after the disease has declared itself. It is notable that the period of incubation is much shorter in the rabbit than in other animals, and this makes the rabbit a more useful reagent for determining the virulence of a particular liquid. M. Galtier found salicylic acid, injected daily under the skin, powerless to prevent the development of the disorder in rabbits.

THE TRANSMISSIBILITY OF SPIRILLUM FEVER BY INOCULATION.—Dr. Carter, of Bombay, announces that the Spirillum Fever of that Presidency (which is due to, or associated with, the presence of a microscopical vegetable organism in the blood)—a fever identical with famine or relapsing fever, or *Typhus recurrens*—may be readily communicated to the *Macacus radiatus*, a common quadrumanous inhabitant of the Bombay forests, by inoculation of the blood of a fever patient. He has successfully repeated the experiment, as well as the similar one of inoculation from one monkey to another, upwards of a dozen times, and has met with only one, or at most two, failures in reproducing the disease, which, for the most part, had been unequivocally manifested by both marked general symptoms and abundance of the attendant blood parasite. The *post-mortem* appearances, also, were equally concordant.

THE AMERICAN SWINE TRADE.—The Toronto *Globe* remarks : " It does not follow that the trade in live hogs between the United States and Britain has received a death-blow. On the contrary, it only needs facilities for slaughtering, and a thorough organization of the means for distributing the meat and offal, to render the trade almost as profitable as if the animal was allowed to go inland alive. In fact, the market for the waste and inferior products of the hog is so much better in England than Chicago that we question if Liverpool might not be supplied with Western hogs, and made a great centre of the packing trade.

EXTENSIVE POISONING BY WATER-HEMLOCK.—A fatal case of cattle poisoning occurred a short time ago in Brittany, a mention of which may be of serviceable warning to some of our readers. The so-called water-hemlock, *Cicuta virosa*, is very generally distributed throughout the whole of Europe, growing chiefly on the banks of brooks, ponds, and swamps, but is rarely regarded as a source of danger to cattle, as these very seldom appear to touch it. In the case above mentioned, however, a herd of fourteen milch cows fed upon the weed with fatal effects, eleven of them dying within a few hours, while the remaining three were rescued only with great difficulty.

CATTLE IN THE UNITED STATES.—The Omaha *Journal of Commerce* of July 21st says : " The cattle drive of the present season from Texas and the south-western ranges is placed at 250,000 head. From Montana and Oregon our estimate places the drive of 1879 at 100,000 head. The drive of Texas and Indian territory cattle and ponies, reaches Ogallala in June, towards the latter part of the month and continues to arrive during July. Kansas was formerly the northern limit of the drive, and this gave to Kansas City a considerable advantage as a market ; but the proportion of the stock remaining in Kansas is yearly decreasing, while that of Nebraska and Wyoming is annually increasing. At Ogallala, on the Union Pacific, is now found the great cattle rendezvous which formerly ended at Abilene, on the Kansas Pacific. Our advices from Ogallala are not up to date, but a week since the arrivals had reached 75,000 head, and it is fair to estimate them at 100,000 head at this point alone. Besides the Texas drive, the mountain drive, of 100,000 head, will reach the Union Pacific, and this route will soon become the greatest stock thoroughfare in the world. The demand for feeders in Nebraska and Iowa is already very great, and the Omaha Live Stock Market is soon to become an important object of interest between the rival Chicago and St. Louis lines, when the new Wabash and St. Louis lines reach Omaha." The same journal also states that the cattle drive is yearly drifting further northward, and the best grounds are now found north of the Union Pacific. This explains why Omaha is rapidly gaining, and Kansas City falling off in cattle receipts—the loss of the latter point being 40,000 head in 1878, com-

pared with 1877, while the gain at Omaha has averaged 25,000 to 30,000 a year.

THE *Idaho Statesman* says, that "Immense herds of cattle have been purchased in Eastern Oregon, and are now being driven across the Snake River and through Idaho to the eastern markets. There are several herds of these cattle, ranging in number from 10,000 down to 1,000, many of which will ultimately reach this market. It is stated that of the cattle coming from Oregon, and those leaving Idaho, not less than 100,000 head will be driven east this season. This cattle trade is constantly increasing; and it is safe to say that from this source alone the railroad, when built, would derive a trade worth nearly 1,000,000 dollars annually. People are just beginning to awake to the immense value of the magnificent cattle ranges, which cover a large portion of Idaho and Eastern Oregon. Purchasers are being attracted to that region by the superior quality of the beef, and the comparatively easy terms on which cattle can be bought. With an advent of the railroad this country will receive a new impetus, as the cattle can be taken on cars to the eastern markets or to the various herding-places along the route. The importance of this trade in the future to Chicago can hardly be estimated, for Chicago is bound to secure the lion's share of it."

FOUR MILLION THREE THOUSAND THREE HUNDRED head of cattle now roam the Texan ranches. New York follows in point of numbers, with a bovine population of 2,100,400. California leads in sheep, with 6,670,600.

POISONING BY URINE.—The following case is recorded by Gavard in the *Journal de Médecine Vétérinaire* for May, 1879. A young ram which had acquired a habit of going upstairs into the house every morning, as soon as the doors were opened, to get what it could to eat from the residents, one morning drank off, before it was observed, the whole contents of a large vessel in which the urine from the different bed-chambers had been collected for the purpose of emptying it away. The animal was immediately seized with violent general tremor; the head was outstretched stiffly, the aspect staring, and the gait staggering, so that it could scarcely stand. As these symptoms gradually increased in severity, the stomach swelled enormously, and the breathing became more and more difficult. In little less than an hour the ram was dead. Half an hour after death, Gavard found the carcass strongly "meteorized," the ocular conjunctiva coloured blue, and thick, black, tarry blood flowing from the nostril. In a very short time further the carcass gave out such a horrible stench that the owner ordered it to be buried at once, whereby the opportunity of a *post-mortem* examination was lost to the veterinary surgeon in charge.

TRICHINOSIS IN ITALY.—So long ago as the 18th February last, a special meeting of the Royal and National Veterinary Society of Italy was held, to receive a communication on the subject of Trichinosis, from Signor Volante, the municipal veterinary surgeon of Turin. In this communication Volante stated that *trichinæ* had been discovered in American hams sent from Cincinnati, and sold at Turin, four per cent. of the hams being infested. The Society addressed a memoir to the Minister of the Interior—to whose charge the sanitary service in Italy is confided—with regard to the general measures to be adopted for the protection of the public from the dangers attending the consumption of American pork which is sold throughout the Peninsula, and urging the necessity for compelling the municipal authorities of towns and cities, who had not already done so, to organise a meat inspection service.

CONTAGIOUS CARBUNCULAR ERYSIPELAS IN AMERICA.—The Rocky Mountain *Husbandman*, says "Blackleg," is rife in Montana herds, and there is

a fear that it may spread to every valley in Montana, and may become a serious obstacle to the cattle-growing interest.

HYDROPHOBIA IN MANCHESTER.—Mr. Southam, resident surgical officer in the Manchester Royal Infirmary, in a communication in the *Lancet* for September 6th, states that five cases of Hydrophobia had been treated there during the last twelve months—all of which proved fatal. One was treated with subcutaneous injections of chloral hydrate and morphia, one with chloral alone, one with curara and morphia, one with morphia alone, and the last with curara and the hot-air bath. Curara is, he thinks, a very dangerous remedy, while the other drugs merely mask the symptoms by narcotising the patient, and before this object can be attained they have to be administered in large and almost dangerous doses. Mr. Southam gives the preference to the hot-air bath, from the relief it affords to the patient and alleviation to the symptoms it at once afforded in the case in which it was resorted to.

UNUSUAL DURATION OF RABIES' INCUBATION IN THE HORSE.—In the *Wochenschrift für Thierheilkunde und Viehzucht* for May, Veterinary Surgeon Gotteswinter relates a case of Rabies in a horse, the period elapsing between the bite from the rabid dog until the symptoms first appeared being twenty months! The circumstances were so marked that there does not appear to be any mistake with regard to this extraordinarily protracted period of latency.

GESTATION AND BREEDING OF THE ELEPHANT.—The period of gestation in the elephant is said by experienced natives to vary as the calf is male or female, being twenty-two months in the case of the former, and eighteen in the latter. I cannot, of my own observation, afford conclusive proof that such is the case, though I believe there is some truth in the statement. I have known elephants to calve twenty months after capture, the young always being males when eighteen months were exceeded, and it was not known how long the mothers had been in calf before capture. The female elephant receives the male again about eight or ten months after calving. . . . Female elephants usually give birth to their first calf at sixteen years of age, sometimes at thirteen or fourteen, but are then palpably immature themselves. I have heard of what appears to be a well-authenticated case of a female elephant having two calves at a birth. Many wild female elephants are accompanied by two, sometimes three, calves of three degrees. Elephants breed about once in two-and-a-half years. Two calves are usually sucking at the same time; and I have even seen the eldest of three—a young elephant five-and-a-half feet high, and about five years old, that had to stoop to reach its mother—suck occasionally. I need hardly say that the young elephant sucks with its mouth, not its trunk. Calves usually stand exactly three feet high at the shoulder when born; the trunk is then only ten inches long, and possesses little flexibility. The average weight of several calves I have weighed on the second day after birth has been 200 lb. They live entirely upon milk till six months old, when they eat a little tender grass; their chief support, however, is still milk for some months. . . . The elephant very rarely breeds in confinement, but this is owing to the segregation of the sexes, and also to the physical causes of insufficient food or hard work. It would not answer from an economic point of view to breed elephants in India, as, before they were of a useful age—fifteen years—they would have cost more than would suffice to capture a number of mature wild ones, ready for work. It is said that they are bred in a semi-wild state, and with little expense, in parts of Burmah and Siam. The females there are shackled and left at large in the forests during the non-working months, where wild males have access

to them. But in Burmah fodder is plentiful, and the young stock cost nothing till taken up for sale. . . . . There is ample proof that it is not the male elephant that comes into season. In following single males with a view to capturing them with trained females, they may always be relied upon to make advances to the females, usually to some particular one, and the efforts of the mahouts are frequently necessary to keep her out of the male's reach. The period of heat is not marked by any particular signs in the female, which has probably helped to strengthen the erroneous opinion spoken of. In approaching a male elephant, a female desirous of his attentions utters certain sounds, and courts his society; but only those conversant with elephants would notice this. It has frequently happened that the tame females of the Kheddah parties have been found in calf after work in the jungles, where wild males have had access to them, though no indications of their being prepared to receive the male were observed, even by their keepers. It has been a disputed point as to the manner in which the connection between the two sexes takes place. Some have supposed that the female kneels or lies down to receive the male, but this is not the case. I have myself on four different occasions witnessed the act, once by two animals belonging to a wild herd in the jungles; on the others, by animals which had just been caught, and which were at large within the Kheddah enclosures. On each, the female elephant stood to receive the male in the manner common to all quadrupeds. The opposite opinion may have arisen from the fact that it is possible for a heavy male to bear down to her knees a female much smaller than himself.—*Thirteen Years among the Wild Beasts of India.*

Dumb Animals as Patients.—We have often been struck with astonishment while witnessing the patient submission of animals, especially dogs and horses, to surgical operations, and to the surgical dressings necessitated by them. A case in point has been brought under our notice. A fine pointer bitch had a large, hard, fibrous tumour of the breast, with deep, far-reaching roots. The operation for its removal was very skilfully and effectually executed by Mr. George Fleming, veterinary surgeon of the 2nd Life-Guards. During the operation the animal displayed an amount of patience that would have been creditable in a human being. Even during the most painful part of the proceeding—that of inserting sutures—she never flinched. The same resignation was displayed when the time for dressing the wound came round. The patient received the surgeon with an air of preparation, and even put herself into position for being dressed. In the case of a similar operation on another dog, some years ago, strong resistance was offered to the attempt to give chloroform; but the animal submitted to the surgical procedure as we have described above. Such facts admit of a partial explanation in the mental theory of pain, according to which, suffering that is not anticipated and mentally apprehended is not pain in the acuter sense of the word. But we should be sorry to see this explanation carried so far as to deprive our dumb fellow-creatures of all credit for the submission they show under surgical treatment. We would go farther, and say that they are vastly more sensible than many human beings in their estimate of the medical profession, and have instinct enough to see that even when pain is inflicted on them, it is for a good and kind purpose.—*The Lancet.*

Correspondence, etc.

THE FITZWYGRAM PRIZES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I hoped to see in your last issue some remarks with reference to the conclusions which General Sir F. Fitzwygram announced, at the last quarterly meeting of the R.C.V.S., with regard to the competition for the prizes which he generously offers every year. But failing to find them, I venture, with your permission, to try and point out what seems to me to be a great mistake or oversight. It is stated in the report of the meeting, that next year the competition for the prizes will be limited to those graduates who passed with *Great Credit*, but would be extended to members of the Royal College of Veterinary Surgeons who had held their diploma not more than two years, instead of one year as heretofore. The number of marks necessary to pass from the first to the second stage of the competition would be raised from fifty to seventy-five per cent. on the numbers allotted to each subject. The advantage of the latter change I think no one will dispute, as it is a fair standard for the student, since his period of tuition has extended from three to five sessions. Therefore it is quite natural for the respected donor to expect an equivalent advance in knowledge. Also allowing students to compete within two years after they have received their diploma, is no doubt an improvement ; although at first sight it might seem a little unfair to a newly-fledged member, still I think that, practically, it will not be found to be so, while at the same time it will leave a larger margin to obtain candidates from. With regard to the first part of the notice, viz., that the candidate will be limited to those who have passed with honours (*Great Credit*, etc.), I wish, with all due deference to our liberal benefactor, to make a few remarks. First of all, we ought to consider how the distinguishing honours "with credit, etc.," are obtained. The examination, as we are all aware, is a verbal one (with the single exception of scribbling a certificate as to soundness), limited to a short time for each subject. Now, if one looks at this in a straightforward manner, can we honestly say such a one-sided examination as this can test any student's abilities? I think most of us will answer in the negative ; for we are not all gifted with the same amount of confidence and frankness. In fact, I remember when I attended the "private classes" in Camden Town that there were men who answered the questions given to them in quite a different manner (and even falsely) to what they would have done, had they been in one of their fellow-student's rooms. If this be so, before a *teacher* with whom they are more or less familiar, how much more nervous and timid would they be when answering *strangers?* Added to which, no responsibility, as it were, rested upon their answer in the one case ; whereas in the other it did, consequently making the student more cautious how and what he says. Some persons will say, "Oh, but he knows his diploma is at stake in one instance and not in the other, and he is sure to keep his wits about him." But my experience (which no doubt is very little) is the opposite, for the more responsibility some men have the better they wish to do things, and the more they try so the worse they are off. There is another fact, viz., they know they have only a very short time to answer their questions in ; therefore they try to answer every question that is put to them, and they often receive questions upon subjects in which they know they are *weak*, and if they receive a question they know nothing about they are too timid to say, "I don't know," which if they did say, would allow the examiner to take them at once to another subject where they might be quite "at home," and so gain the requisite number of marks in the allotted time. But no ; the poor student is too shy,

or he thinks it is degrading to tell his examiner straight out that he is ignorant upon any subject ; so he goes on hesitating until he exhausts his examiner's patience, and is hurried, perhaps rather impatiently, on to a fresh subject, thinking all the time that he is certainly *spun.* Consequently, in his confusion he cannot do justice to himself or his examiner, and he finds the bell rings before he has had a chance to recover himself. If this should unfortunately occur at his *first* table, he is utterly unnerved at the others, and finds when the roll is called that his name is absent ; or if not, he certainly does not have the cheering words passed with "credit," "great credit," or "very great credit," added to it when he receives his diploma. Although it is possible that he may have known the subjects as well as those who passed with honours, still he could not distinghish himself, because the examination was conducted in a manner which did not suit him. Therefore I maintain that by our present method of examination it is hardly possible to *class* the men who present themselves, and in my humble opinion no stress or distinguishing mark ought to be put upon them, so as to prevent them from competing for the prizes offered, so long as the examination remains purely verbal. I should, consequently, be very glad to see the words "with credit," etc., expunged from the rules for all prizes which are offered to members of the R.C.V.S., until our examinations are (what may I say ?) *worthy* of classing its students. I think no examiner or teacher would say that an oral examination for so short a time is sufficient to obtain a trustworthy knowledge of the abilities of any student, more especially as they do not all have the same questions to answer. In order to fairly and honestly class the men for any examination, they ought to receive the same questions (or as near as possible), and this can only be done by having a *written* as well as verbal examination. I have no doubt that Sir Frederick Fitzwygram put the words in his rules, with his usual wish of advancing our students, but I think if they are retained there will be many good and worthy men excluded from the competition. I am, my dear Sir, Yours, etc.,

"A First-Prize Winner."

THE CASTRATION OF CRYPTORCHID HORSES.

To the Editor of the Veterinary Journal.

Dear Sir,—By the permission which you have kindly extended to me, I now make some statements and observations in reference to questions that are repeatedly asked of me by members of the profession in this country.

I have travelled six thousand miles in England, Ireland, Scotland and France this year, in compliance to demands for my services in my specialties. I have castrated ninety "rigs," and quite a number of entire colts and horses from four weeks old up to twenty years. I have also spayed some cows and bitches, and caponed hundreds of spring chickens. Of course, I had to meet thousands of strangers, and am pleased to say I made many very pleasant acquaintances, and feel that many of them are dear friends whom I am under many obligations to for much kindness shown me—a stranger.

In availing myself of the opportunity you have afforded me to make some remarks on the subject of castration, I think it will be most satisfactory to state the kind of questions usually put to me by veterinary surgeons, and give my replies to them. They are as follows :—

Question.—At what age is it best to castrate a colt ?

Answer.—I think at from two to four months old, because it is then easier handled.

Q.—Is it safe to castrate very old horses ?

A.—I think age makes no difference, if they are healthy and are handled mercifully.

Q.—At what age do you castrate your own colts?

A.—While they are sucking; for I think it makes them finer in the head and neck, larger in the hips, and more saleable.

Q.—Can a colt castrated so young undergo hardship when full-grown, like one castrated when four or five years old?

A.—No.

Q.—Why, then, would you castrate so young, and thereby impair the endurance of the animal?

A.—For economy's sake. It costs too much, generally, to keep him—a restless stallion—for two or three years.

Q.—How can I obtain the toughest and most enduring horse the cheapest way out of my colt?

A.—Castrate your colt when young; feed him well; and when grown, sell him, and buy a "double rig" with about half the money.

Q.—What is a "double rig" horse?

A.—A horse with two unnaturally located testicles.

Q.—Can such a horse get a colt?

A.—No; if both testicles are in the abdomen he cannot propagate.

Q.—Can any "rig" sire a colt?

A.—Horses with one healthy testicle down naturally are as sure foal-getters as when both are down.

Q.—Does a "rig" stallion get many colts like himself, with one testicle up and one down?

A.—He will get some most likely, but I am not able to fix a percentage, for some will get more than others, even to twenty-five per cent. sometimes.

Q.—How do you account for "double rigs"?

A.—My inquiries about such lead me to believe that mares sired by "rig" stallions, and bred to "rig" stallions, are much more liable to bring "double rigs" than those which are not.

Q.—Is it of service to take out one testicle when both are not down?

A.—Yes, it is; no, it is not. It will stop his breeding, but he will squeal and be as troublesome as ever.

Q.—How many kinds of "rig" horses are there?

A.—I tell my pupils there are five.

Q.—What are your terms for instruction in your method?

A.—I charge veterinary surgeons in England nothing as a fee, but require them to collect for me to castrate some stock in the class that they wish my methods demonstrated upon, and they are expected to help me do the work. If it is colt castration, six colts; if it is "rig" castration, six "rig" horses; and the written obligation of the veterinary surgeons not to divulge my methods of "rig" castration for five years.

Q.—Why do you wish this kept secret?

A.—Because I would do England a great wrong to make my methods of "rig" castration public, and not fully instruct, which I cannot do. Half the success of "rig" castration consists in properly casting and securing, and I cannot tell or teach that without the subjects to operate on. Men half instructed would kill much stock, and then stop for want of patronage; and I would get no thanks, but much blame, while unnecessary cruelty would be inflicted on animals, and "rig" castration would be called a failure.

Q.—How do you castrate ordinary colts and horses?

A.—Nearly every way I ever heard of. I prefer to cast and secure them lying, as that position is better than standing up. I like a small hook to open the scrotum with, two incisions being made, and I prefer a good ecraseur to take both testicles off at one time, this being better and less painful than any other method.

Q.—How often have you used the ecraseur?

A.—Almost constantly for nine or ten years, both in winter and summer.

Q.—How do you manage to stop the hæmorrhage?

A.—I let it stop of itself.

Q.—Don't some bleed to death?

A.—No.

Q.—Don't you have some secondary hæmorrhage?

A.—Yes, one in fifty or seventy-five castrations.

Q.—How do you do then?

A.—I stand and look at it, and tell the owner I can stop it in two minutes if he will cast the horse, but advise to wait a little longer.

Q.—How would you stop a bad case?

A.—By either ligature or the ecraseur—the latter being put on the cord a little above the part where the bleeding is, which is then slightly crushed. This is the best plan. I have not cast but one horse in twenty years to stop hæmorrhage, and that was unnecessary work; and I think plugging the scrotum is unnecessary if the operator is not scared too much to be still a little longer.

Many years ago I would get uneasy about much bleeding. Since then I stop it by faith in nature and a good ecraseur.

Q.—How do you keep a horse from swelling after the operation of castration.

A.—By having the scrotum frequently opened, and ordering constant work or exercise.

Q.—Do all horses require that care?

A.—No, only a few.

Q.—What season of the year is best?

A.—All seasons, I think, are alike for safety. I offer insurance on all, at any time, and allow the animals to be worked every day after the operation. But I would advise that colts be kept from a cold chilling wind when they are so sore that they will not voluntarily take exercise and warm themselves.

Q.—How would you remove the soreness?

A.—By exercise only—the "movement cure."

Q.—How do you treat a Schirrus cord?

A.—If it is large—say five or six pounds, or more—I cut down on one side to the cord, dissect it out from the tunic as high as it is much swollen, and take it off with the ecraseur. I have removed one weighing eleven pounds, and I think the horse lost two gallons of blood; yet it got well in a short time. Along with the tumour, at the bottom of it, I removed some skin about the size of a common plate.

Q.—Why do you say so much about caponing fowls, it is an old operation here?

A.—Because I think it is as important as to castrate male pigs. The greatest delicacy we can get in flesh is so easily obtained that way and is much neglected in England, where good flesh is appreciated.

Q.—If your advice was asked in the interest of the profession, what would it be as a castrator?

A.—I would say do not tie the horses' hind feet up to his shoulders, for that is dangerous to the back, but tie to the hips and leave the back free. Do not use a long nose-twitch, which is cruel. A short one tied on in moderation does more good with less pain, I think. Socially, I would advise you to say no hard things against any M.R.C.V.S. Outsiders will do that enough. Financially, if opposition in competition is strong, sell out to the competition, move to almost any part of Central United States of America, and you will do well. I have travelled much in both countries, we are one people, but in America any M.R.C.V.S. would have plenty of room and business if he is a worthy and steady practitioner. Yours truly, "FARMER MILES."

PROFESSIONAL UNITY.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—As a H. and A. S. certificate holder, I, like many more in the North of Scotland, have been, through the medium of your valuable Journal, frequently informed of the agreement come to between the Society and the Royal College of Veterinary Surgeons, by which certificate holders are to be registered as M.R.C.V.S. Something was also said of granting a diploma on payment of the registration fee. Now, sir, as all this information is becoming a thing of the past, and no intimation has as yet been given to certificate holders when or where to apply for the proposed diploma, you would be dispelling a mystery from the minds of your professional brethren in the North, by throwing some light on this subject. Trusting you will kindly afford me space in the next issue of your Journal for the above, as it will not, I think, be uninteresting to the profession generally.

Your obedient servant,

"A NORTHERNER."

[We are sorry we cannot afford our correspondent any information on this matter, but it is probable something will be elicited regarding it at the next Council meeting of the Royal College on the 2nd instant.]

COMMENTS.

THERE is nothing more remarkable in connection with disease than the strange notions entertained by many people with regard to Rabies and Hydrophobia, and there can scarcely be a doubt as to the dangerous tendency of some of these notions. They are held, however, by persons who have had no experience of the malady, and whose ideas with respect to it are consequently vague and unformed. Among these notions is that of the non-contagiousness of Rabies, and that Hydrophobia is the product of imagination. It is forgotten or unknown to these people that Rabies can be transmitted, experimentally, from one animal to another—animals unconscious of having been inoculated, and which have little or no imagination. But we trust that no member of the veterinary profession is now-a-days possessed of such nonsensical and hazardous opinions, and we are glad to notice that the name of the writer of the annexed letter, who evidently knows nothing of the disease, nor, it would appear, of other animal disorders communicable to man—especially those of a febrile character—is not to be found in the Register, albeit he affixes V.S. to his name. In the Editorial for last month we gave the history of a lamentable case of death from Hydrophobia in Dublin. The letter, which we reprint literally, appeared in one of the Dublin newspapers, *apropos* of that case.

HYDROPHOBIA.

"*To the Editor of the* FREEMAN.

"Mulingar, 16th *August.*

"SIR,—Having read from time to time of late from different parties letters in the public print on Hydrophobia in dogs, and its being communicated to man by being bitten. In my opinion such letters are only calculated to do much more harm than good. Hydrophobia in dogs is nothing more nor less than 'meningities,' 'inflamation of the membranes of the brain.' It is a well-known fact that no kind of fever can be communicated from the lower animals to the human subject, and Hydrophobia in dog is simply brain fever. Most medical men say that virus is introduced into the wound from the dog's teeth, but at the same time they say they cannot tell where the virus comes from. There is no such thing as virus on the teeth nor mixed in the saliva of dogs suffering from 'rabis,' unless that the animal has been mouthing some

foul thing immediately before the act of biting; and suppose such to be the case, the virus introduced into the bite would cause blood poison, a disease altogether different in every symptom of Hydrophobia. How is it that out of every fifty persons bitten by rabid dogs only about one dies of what is called Hydrophobia, the which I believe to be entirely brought about by imagination? With regard to the treatment of the bite, and to save any unpleasant consequences whatever, as I said, in case the animal has been mouthing any foul thing, a good caustic dressing to the wound and a dose of physic is quite sufficient to prevent any unpleasant symptoms. DAVID FULTON, V.S."

A LITTLE cardboard box has been forwarded to us with a label thereon, purporting that it comes "From the Royal Canine Hospital, 55, South Molton Street, Bond Street," and thereto is added "Mr. Rotheram, R.V.C.S." We are asked whether that person is a member of the veterinary profession, and the significance of the letters appended to his name. We can only state that there is no such name as Rotheram in the Register of the Royal College, and that we are unable to explain the purport of the mystic *addenda*, unless to lead the public to believe, from their similarity to M.R.C.V.S., that he is not a quack but an educated veterinarian. Such devices are far from uncommon, and they generally serve to delude the unwary.

ANSWERS TO CORRESPONDENTS.

A SUBSCRIBER.—The bullocks died from Anthrax. You do not allude to the state of the spleen. It is extremely probable that the attack was due to drinking the stagnant water on the common. You might have tried the administration of carbolic acid.

SANITAS.—You will find the subject treated in the editorial of the present issue.

MR. FROST, Army Veterinary Department, Rangoon, is heartily thanked for sending the elephant's eye for microscopical examination of the retina, and for carefully preserving it according to the directions given in the Journal, Vol. vii., p. 292.

Communications from F. Smith, A. E. Queripel, J. W. Hill, J. Gerrard, and Professor Walley are unavoidably held over until next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from M. Hedley, Dublin; T. Campbell, Kingston; "Vertute et Labore"; W. Marshall, Glanton, Northumberland; W. F. Anderson, Warwick; H. Darley, Windsor; G. A. Banham, London; "A First Prize Winner"; Professor Walley, Edinburgh; D. Hutcheon, Liverpool; W. Pallin, 20th Hussars, Manchester; J. D. Overed, Blofield; F. Walker, 7th Hussars, Newbridge; R. Ward, London; G. G. Whincop, Norwich; F. Miles, London; J. W. Hill, Wolverhampton; J. Shivas, Invergordon; J. Gerrard, Romford; G. R. Dudgeon, Sunderland; "A Northerner."

BOOKS AND PAMPHLETS: *Stockfleth and Steffen*, Handbuch der Thierärztlichen Chirurgie; *Dr. Anacker*, Die Knochenbrüchtigkeit der Rinder; *Dr. Dubonê* De la Physiologie Pathologique et du Traitement Rationnel de la Rage; Annual Catalogue and Announcement of the Columbia Veterinary College for 1879.

JOURNALS, ETC.: *Wochenschrift für Thierheilkunde und Viehzucht; Archives Vétérinaire; Recueil de Méd. Vétérinaire; American Live Stock Journal; Journal de Médecine Vétérinaire et de Zootechnie; Lancet; Der Thierarzt; L'Echo Vétérinaire; Live Stock Journal; Journal of the National Agricultural Society of Victoria; Melbourne Chemist and Druggist; Agricultural Gazette; Mark Lane Express; Farmer; Œsterreichische Vierteljahr. für Wissenschaftliche Veterinärkunde; Revue Vétérinaire; Schweizerisches Archiv f. Thierheilkunde u. Thierzucht; Medical Press and Circular; Nature; American Veterinary Review.*

NEWSPAPERS: *Freeman's Journal; Montreal Daily Witness; Scotsman; Glasgow Herald; Manchester Guardian; York Herald; Lahore Civil and Military Gazette; Madras Mail; Albany Country Gentleman.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

NOVEMBER, 1879.

SURGICAL AND PATHOLOGICAL NOTES.

BY J. WOODROFFE HILL, F.R.C.V.S., WOLVERHAMPTON.

Splint.

I AM not exaggerating when I state that many of what are looked upon as obscure cases of lameness, are due to the presence of what is now so frequently passed over in examinations as to soundness, viz., Splint. If the latter is well forward, a fair distance below the knee, and the action sufficiently wide to escape its being struck, it is considered by some individuals, irrespective of its character, harmless. The animal, on this opinion, is purchased, goes to work, and ere long the jar on our macadamized roads tells its tale. The little splint increases in size, the animal evinces pain on pressure, and the part is abnormally warm. Or, on the contrary, no increase in size may be apparent, but yet withal the soreness exists with attendant lameness, and much disappointment ensues to the owner of the animal. Many and various are the opinions given, and without wishing to arrogate to myself, as a young practitioner, any special ability in diagnosis, I venture to think that the foot and the shoulder have far too frequently to bear the brunt of the mischief due to the little overlooked splint.

Age, too, is considered by some a safeguard against splint lameness. Young horses are considered most liable to it, and I cannot contradict this assertion; but it certainly is of a briefer duration, and not of so serious import as when the lameness

occurs in aged horses. It is an *old splint re-active* which is most troublesome, and it is this kind of splint, which is so often overlooked on account of its long existence, that I have successfully treated, and this has consisted in subcutaneous periosteotomy.

For some years I have practised this well-known and simple operation, and from the favourable results obtained, I continue to do so; indeed, to use the late Professor Spooner's words, "I am decidedly of opinion we cannot dismiss this operation from veterinary practice."

In most cases I insert a small seton immediately afterwards—the time of its removal to be regulated according to circumstances. The effect of relieving the tense condition of the periosteum is not the only point gained, for in several instances the splint has entirely disappeared; for as the Professor remarked, "by passing the knife into the substance when not fully developed, we divide the nerve part and render it numb, causing suppuration and producing new action." In other words, we create a destructive process and subsequent re-absorption of the liquified part.

Inflamed bone, whether it be bone proper, or a deposit, is excessively painful, and the same will apply to the periosteal membrane. Hence the acute lameness arising from splint.

These few remarks are penned with the hope that so simple an operation, with such successful results, may be more generally adopted; for it is at the present time more a disused than an abused one.

Fracture of the Metatarsal Bone (Colt).

On the 17th of August last I visited a well-bred chesnut colt, three months old, at Mr. Beach's, of the Hattons, and found the same to be suffering from a comminuted fracture of the off hind leg below the hock, two pieces of the metatarsal bone nearly protruding through the skin. The animal had been at pasture with its dam, and was discovered the previous night in the above condition. The accident was supposed to have been caused by a kick from the mare, or from getting fast in a ditch. Having reduced the broken pieces to their proper position, I placed the

limb (first applying a bandage, which I always do to prevent sores) in four wooden splints, smeared with pitch, one on either side, and one at the front and back; the whole being secured by pitch bandages. On rising, the little patient at once made use of the injured member, but he soon adapted himself to circumstances and carried it. I have visited him from time to time with satisfaction, as I could not have wished for better results. He soon became tired of three-limb exercise, and I generally find him lying down (on the opposite side), to which I attribute much of the success. I saw him to-day, the 15th of September, when he jumped up nimbly, and made fair use of the set limb. The splints still remain in position, but I doubt not union of the fractured bone has taken place, though I do not intend to remove the support at present.

The patient has been kept during treatment in a large loose box, along with its mother.

Complicated Disease (Dog).

On the 30th of August last, in answer to a request, per telegram, from the Rev. G. A. Sneyd, of Chastleton Rectory, Moreton-in-the-Marsh, I visited his champion St. Bernard, "Hector." On my arrival I found the dog very much emaciated, exceedingly weak and languid, the heart's action irregular, and respiratory murmur considerably increased on the left side. He had, I was informed, been troubled with cough, but this now was absent; the coat was harsh and staring, and there was an eruptive condition of the skin. He had eaten his usual breakfast that morning. My opinion was, that the dog had been suffering from an attack of Pleurisy, and there was now, associated with the result of this, some cardiac derangement. It was thought advisable he should accompany me back to Wolverhampton, and I therefore took him home. On changing at Worcester, I noticed his languor had increased, yet he readily took the scraps offered him in the refreshment-room. On our arrival at Wolverhampton his weakness was extreme. A diffusible stimulant was administered at once, and brandy and milk given frequently, as he took no food voluntarily. The following morning the breathing was shorter, and as no passage of fæces had taken

place, an enema was had recourse to, with the desired result. Mustard was applied to the sides. He lapped a little cold milk. His medicine consisted of spts. ammon. aromat., with tinct. ferri. three times daily, and good mutton broth and milk was administered day and night.

Next day the symptoms were more unfavourable ; the breath was drawn in short gasps ; auscultation revealed the fact that thoracic effusion was rapidly taking place, and the heart's action had become excessively feeble. I inserted a seton obliquely across both sides and dressed them with terebinth, as also a large clipped space around them. Brandy, port wine, etc., and every kind of support was given, but my patient gradually sank and died the following day at noon.

A *post-mortem* examination proved that the immediate cause of death was the presence of a large *ante-mortem* clot immediately under the valve the left ventricle in the heart. This clot was $3\frac{1}{2}$ inches long, $\frac{1}{4}$ inch thick in the middle, and $\frac{3}{4}$ inch wide, of a greyish-white colour and dense consistency. It occupied, as may be imagined, the greater portion of the ventricle. There was also a smaller clot of the same nature, but of more recent formation, in the right ventricle, and similarly placed.

The heart itself, which weighed 13 ounces, was exceedingly pale and flabby. Its immersion in the pericardial effusion, which was considerable, would to some extent account for this condition.

The cavity of the chest on both sides, but more particularly the right one, contained a large quantity of effusion, which must speedily have resulted in Asphyxia.

The lungs were emphysematous and highly congested, and traces of old pleuritic affection were well marked.

The liver, which weighed a little over four pounds, was nearly all friable and black. Such portions towards the edges of the lobes that were not involved in this softened condition, were of a very pale clay colour. The capsule of the gland was ruptured in several places on its convex surface.

The gall-bladder was distended with bile.

The spleen, which weighed two ounces, and measured 17 inches in length, was almost colourless, and had a compressed appear-

ance, as though devoid of any pulp substance. It presented on the one surface a number of irregular-shaped air-bubbles, containing small straw-coloured granules. Splenic incisions revealed nothing within, except a pale chocolate-coloured, creamy matter, which oozed out after the knife.

Beyond an external view of the remaining abdominal viscera, on which there were old patches of peritoneal inflammation on the large bowels, my examination was not carried.

I may mention that I was first consulted about Hector in May, regarding a persistent Diarrhœa and low condition. This I treated successfully by ordering well-boiled porridge, with paunch and glutinous matters, in lieu of his then diet of horse-flesh; and, medicinally, I prescribed small doses of sulphate of iron and opium. He soon improved, and was exhibited at the Alexandra Palace show. From that date until the last illness I had not seen him.

It may be well to observe that the dog was fond of the water, and was frequently indulged with a bath—often, I fear, too prolonged; and this had been kept up until the day previous to my visit, when the animal was manifestly unfit for a cold immersion.

But it is not at all unlikely that his many preparations for the show-bench, year after year for nearly six years, may have undermined his constitution and given rise to such complicated disease. Our canine friends, unfortunately, have, like other domesticated animals, to be "*got up*" before they can be shown, all good points and indications of pure breed going for nought unless *condition* be present; and this essential (?) condition, or "*getting up*," is, in the hands of some individuals, the bane of canine existence. Whether it be simply by a forcing or cramming system, a few weeks before the show, after a prolonged stinted diet, or by the administration of so-called "condition agents" and such-like nostrums, of which now advertising columns teem, both are alike injurious, and sooner or later must exhibit their pernicious effects. A well-regulated diet, exercise, pure water *ad libitum*, cleanliness—in fact, a proper observance of the laws of hygiene—is the best and only right way of keeping a dog or any other animal in condition.

What Hector's preparations in the past consisted in, I know not; but his condition when I saw him first, and his enteric irritability and variableness pointed to defective digestion and organic disease. All that can be said now is that he was a grand type of his breed, gone too soon.

"BURSATTEE."

BY F. SMITH, M.R.C.V.S., ROYAL HORSE ARTILLERY, WOOLWICH.

IN order that we may thoroughly deal with my subject, and treat it in a manner worthy of the important position it occupies in Indian veterinary practice, we must review the opinions of the various members of the profession who have drawn attention to Bursattee in professional periodicals within the last few years. Their contributions are to the point, but not numerous; and the most valuable are those which have appeared from the pens of Major Cane, M.B., R.A. (*Veterinarian*, June, 1876), and Mr. Spooner Hart (*Veterinarian*, 1872 and '73). From time to time, before the origination of the VETERINARY JOURNAL as a means of professional intercommunication, notices appeared from the pen of Messrs. Hurford, Western, Hodgson, and other observers, which drew the attention of all thinking veterinary surgeons to the subject, and aroused much laudable curiosity concerning it. Previous to this time most extravagant ideas as to its nature and treatment prevailed. Glanders, Scrofula, and Syphilis in turn were considered its nearest allies. And for its cure the most powerful agents were used, and to such an extent as to aggravate its already too unsatisfactory character. The outcome of their observations was, that with improved ventilation and management, this disease, like most others, assumes a less severe character, and proves much more amenable to treatment. And the observation of Mr. Western (*Veterinarian*, 1853, p. 429, note), that a course of prophylactic tonic treatment proved efficacious in its entire prevention in his regiment, though by no means confirmed, is worthy of note. No suspicion seems to have up to that time entered the minds of veterinarians as to the non-contagiousness of the affection; and we lay stress upon this point as one still under debate, on which we are prepared to make some observations.

The presence of the remarkable morbid products termed "kunkur stones," naturally attracted attention to the pathological lesions of the disease, and led observers to attribute something specific to its nature. Mr. Hurford is an able opponent of this point of view, and his conclusions deserve quotation :—"The fibres of the body are in an unhealthy and relaxed state from the condition of the atmosphere. It is difficult to get the most trivial wound to heal at this time;" and "I do not believe in there being anything specific in the disease, more than its being a morbid state of the skin produced by the moist atmosphere. An animal having been so affected one year, and said to be more liable in consequence, is simply in obedience to a law of nature which determines new-formed parts more susceptible of attack." This view, however, simply confirmed the advisability of recourse to Hodgson's and Western's treatment, which comprised good, full feeding, tonics, and keeping the horse in condition, as means of inducing a state of the constitution favourable to cure. With its theory we shall deal hereafter. The symptoms of the disease comprise lesions of a special kind, occurring more particularly in certain positions on the body, of which the most frequent are allowed to be the angles of the mouth, prepuce, and glans penis, fetlocks, and pasterns. The majority of cases come under our notice during the rainy season, but the disease is not limited to this time of the year, for we meet with many cases during the hot weather. These lesions result from spontaneous local disorder; but in some cases external injuries may act as local determinants. In all cases, it seems to me, the disease originates *in the subcutaneous tissues* (the skin becoming secondarily involved in the diseased action). From the first the disease assumes a furuncular character, though its progress is marked by certain peculiarities, the most distinctive of which is the assumption of an indolent nature, whereby the products of disease undergo peculiar elaboration and remain for some time as irritants. These products are the "kunkur stones," and the peculiar characters which we shall note in them render their removal absolutely essential to cure. A Bursattee sore, then, undergoes the following process of development :—The commencement of a sore on the mouth (where, in consequence of thinness of the skin, we are

most satisfactorily able to trace the processes) is marked, first, by swelling of the part, with heat and pain on pressure. In about four to six days it is possible to detect that one part is becoming much harder than the rest. This circumscribed condition is about the size of a small nut, and by manipulation we may determine that it is situated in the subcutaneous muscular structure of the part, and increases in size until it is about as large as a shilling; when, after it has lasted from ten to fifteen days, the skin opposite becomes thickened, and adherent to the nodule below. And we must particularly note that it is only in the second stage that the skin becomes involved, and the disease assumes the papular character. The skin is involved simply by an extension of the morbid process outwards. By friction or otherwise the cuticle is removed, and an open sore results almost suddenly; so that we have in our mind a case where the patient at night presented only nodules, in the morning each of these was an ulcerating sore. Here acute inflammation is suddenly replaced by an indolent action which leads to the peculiar characters of the Bursattee sore, which are as follows:—The edges are raised above the surface, and fairly regular, and occasionally they are callous. Ulceration occurs more or less over the whole surface, but in the large sores removal of tissue is almost completely limited to patches; and where it occurs, the granulations are of a yellowish-red colour, with *very little* discharge, which is more watery than healthy pus, and of an ichorous character. On examining the sore externally to the ulcerating surface, the intense hardness of the tumour is very perceptible (so that it feels *like a stone* under the fingers). The ulcerating surface is concave, and situated on and embedded in it are yellowish spherical bodies rather larger than a pin's head and very hard, which by pressure can be forced out of the sore, when each leaves a depression behind from which a little clear fluid exudes. These ("kunkur") bodies vary in number, and as many as six or eight may be seen on the surface of an ulcer of the size under description. We cannot approve of the term "phagedenic," as often used to indicate the characters of the sore. After the papular stage all the phases of its progress are indolent; its increase in size (if it does not remain stationary) is by no means so rapid as

the term phagedenic would imply, but while retaining the appearances described, the above-mentioned ulcer by the close of the rainy season would about attain the size of half-a-crown.* This change in the season brings about a spontaneous cure, and the resulting cicatrix is of a bluish-white colour, consisting of imperfectly-formed skin puckered over the seat of the ulcer, and considerably thickened. The appearances of these cicatrices is well known to all practical Indian horsemen. This repair is, at any rate, generally of a temporary character, and when the next season comes round, either in the hot or in the rainy weather, recrudescence occurs, and the Bursattee sores reappear as in the preceding year. The sores generally remain distinct, but sometimes, especially on the penis and prepuce, they assume the confluent character.

Constitutional symptoms are not marked, but we should expect to note febrile conditions only in the early nodular and papular stages, which are never brought under our care except by close personal observation. This is a point of importance, and requires further elucidation, especially as many authorities consider that this disease belongs to the class Exanthemata. With regard to fitness for work, horses suffering from this affection are saved as much as possible; but if occasion should arise, they may be worked except when the wound would be interfered with by any part of the horse's "appointments." We believe that exercise is almost always beneficial.

When the disease affects the lower parts of the limbs, as the pastern and fetlocks, its progress is, in the early stages, to a certain extent obscured by the thickness of the skin. Without due care, also, complications subsequently arise from the friction of grass, which many horses have a habit of rubbing against the fetlocks to clean, preparatory to feeding on it.†

From the nature of the disease it does not prove fatal, for the parts involved are not of sufficient importance to—when thus

* Occasionally the ulcers do assume a true phagedenic character, due to neglect of treatment and peculiar constitutional conditions. We observe that Mr. Spooner Hart describes three forms of the disease. The opportunities of private practice have given him a considerably wider field for observation than ours, and he has made the most of it.

† The "grass" of horses in India—*Dhoob*—is almost wholly composed of long, running roots, and it is on these that horses mainly feed.

affected—seriously impede the vital functions; but often old horses have the surfaces of their bodies so extensively involved that humanity leads to the destruction of the patient, who has become but a loathsome eyesore. *Post-mortem appearances.*—Visceral lesions have not been observed by me, but a paper by Mr. Meyrick (VETERINARY JOURNAL, 1878, ii.) alludes to the observation by Mr. Burke of "kunkur" in the liver and lungs; and the author in one case himself found "kunkur" on the pleural surface of the lungs.

We have spent much time and labour in microscopic examination of the structures affected, and hope therefore to describe with considerable thoroughness the effects of morbid processes upon the parts. The first thing with which we have to deal is the peculiar hard bodies which may be obtained from the surface of the tumour on the living animal by expression. We have noted above that these are commonly termed "kunkur stones," but we must object to this term, as tending to support erroneous ideas as to their nature and source. The name "kunkur" is applied to an extremely prevalent form of limestone used in India for road-making and other purposes. This is of a French-grey colour, and occurs in nodular masses of about the size of an egg. It was supposed the Bursattee concretions were in some way related to this soil, but no doubt the name originated from the stony hardness and nodular character of the concretions. Opinions have differed much as to the nature of these bodies. Some considered them bony (Western); others attribute them to aggregation of Scrofula cells and subsequent calcareous degeneration of the small mass so produced (Hodgson); others consider them simply inspissated pus (Phillips); while Mr. Meyrick (VETERINARY JOURNAL, 1878, ii.) states that sometimes they contain crystals of uric acid and oxalate of lime. This must be, however, in those of very long standing, for my researches indicate that they have an organised character. Microscopic examination of one of these bodies under a low power shows that it is irregular on the surface, presenting fine projections, as well as those larger ones which are visible to the naked eye. These probably serve to keep the bodies in position within their capsules, and give them an irritating character which materially influences the progress of the tumour. The bodies

are yellowish-white in colour, indefinite in form, and perfectly bloodless; their investing capsule is rough and fibrous, and irregular on the external surface. They readily slip from under the knife. Examined under $\frac{1}{4}$-inch power, with No. 1 eyepiece, they are found to very closely resemble the tissue of the tumour in which they are embedded; thus a section of one of them presents fibres taking a slightly wavy direction and crossing each other irregularly, and thus forming a network, the meshes of which enclose certain cells and granular matter. The fibres are white, with single outline, and the cells are similar to those which we shall describe as pervading the mass of the tumour. On the surface of the body is a firm layer, apparently composed of epithelial cells.*

A section through a Bursattee tumour presents a yellowish-white colour, and seems fibrous throughout. The yellowish bodies hitherto described as on the surface of the tumour, are found throughout its substance; and those which are deep-seated, in their relations and structure resemble the superficial ones. These seem as though gradually worked up from below as ulceration progresses.† There is no distinct line of demarcation between the tumour and the surrounding tissue, but they gradually become blended together. Microscopic examination of a *chronic sore* presents somewhat the appearances of a simple fibrous tumour—its fibres take a wavy direction, and cross one another, and in their meshes are small, brownish cells of the size of red blood-corpuscles, and having nuclei.‡ When liberated from the tissue by tearing they swell, become dark in places, and even exhibit nucleoli. These fibres are of varying sizes, ranging from that of yellow elastic to that of ordinary white fibres. In reactions under chemical tests they resemble the latter: thus, acetic acid causes them to swell and become indistinct; liquor potassæ renders them clearer, and their reticulations more marked;

* The ulcerating surface appears to consist of nucleated fibres with fine extremities, and non-nucleated fibres intermingled with dark cells and smaller transparent cells.

† Some of the fibres appear to be nucleated and to have fine extremities.

‡ In the superficial layers of the tumour, however, in addition to the round brown cells, occur certain cells of the size of tesselated epithelim, and of a well-marked brown colour. These and some of the round cells adhere to the surface of the fibres. There also occur epithelioid cells in the deep portions of the tumour, but in them the colouring matter is confined to the two or hree nuclei.

acetic acid causes the cells to swell, and if not too strong, renders their nuclei distinct, whilst liquor potassæ dissolves the colouring matter and nuclei of the cells, and renders them an amorphous mass.

If a tumour of short duration be examined, a marked difference will be noted. Instead of dealing with small white fibres, we have now fibres four or five times their size, running in a wavy manner, and somewhat parallel to each other, and containing cells which exceed in size those of the chronic tumour, being as large as white blood-corpuscles. These fibres have a dark outline, and are slightly granular throughout the circumference, but very bright along the axis. They are irregular in calibre. The cells are remarkable as having two, three, or even four nuclei. The first stage of growth of the tumour seems to consist in the appearance of certain large fibres faintly striated longitudinally. These gradually become infiltrated with the specific brownish cells, which seem to become fitted into the striæ between the smaller fibres which result from the longitudinal splitting of the larger ones; by an extension of the process the fibrous reticulum, with the cells in its meshes, is formed. These fibres press upon the muscular fibres among which they appear (in the case of tumour at the angle of the mouth, for instance) and cut off their nutritive supply; they consequently undergo atrophy and degeneration, lose their transverse striæ, and become finely granular. And ultimately, as a result of continued pressure, the muscular fibres totally disappear, and so the chronic tumour is composed simply of fibres and cells as above described. It will be observed that the large primary fibres are the parent stage of the smaller ones, into which they become converted by infiltration with the specific brownish cell, and by longitudinal splitting. All muscular changes are purely secondary, none can occur in tumours on the fetlocks, pasterns, etc.; in all cases it is the white fibrous tissues of the part which are the seat of change.

We must now examine the intimate nature of the disease; and firstly must decide whether it is of a purely local character, or whether the constitution in general is affected. Of diseases the cause of which is some alteration of the blood, we find two

classes. The first is that in which some deleterious matter has gained entry into the system, and is removed by certain ways, either through excretory organs, or through these *while it is acting on particular tissues or organs.* Among diseases of this class are Syphilis and Scrofula, to each of which the affection under consideration has been likened, but the analogy in neither case holds good; for in such affections morbid matter is taken up from the parts diseased, and while passing through the lymphatic vessels and glands originates morbid processes in them, constituting secondary disease. We find no such condition in Bursattee; the lymphatic system remains unaffected, and one circumscribed portion near the surface of the body may be the sole seat of disease for some long time. These diseases, too, are communicable by inoculation, and on this point I must record the following observations:—

1. Pus and cells from Bursattee tumour of a horse introduced into another horse labouring under the same affection, in two places (on mouth and side). Cuticle removed from mouth, and matter applied to exposed surface of dermis. Matter introduced into subcutaneous areolar tissue of side. No appreciable effect at mouth; on the following day considerable swelling with great pain at wound of side; this gradually subsided, leaving behind considerable induration around original wound.

2. A similar case, with entirely negative results. Horse inoculated never had had Bursattee.

3. Foal inoculated both ears—subcutaneous injection—negative result.

In several other cases negative results were obtained. Thus, with exception of the case of an animal already affected, and which did not really give proof of the development of the disease, in all cases attempts to communicate by inoculation failed.

With regard to the question of the scrofulous nature of the disease, the tumours resemble Scrofula tumours to a certain extent in their sluggish character and in their structure, but the brown cells are characteristically different from Scrofula cells, and the nodules are not formed of inspissated pus as the advocates of the Scrofula theory imagined.

(To be continued.)

PARTURIENT APOPLEXY (MILK FEVER) AFTER ABORTION: TWO CASES.

BY "CYCLOP."

THE first of the two following cases of Parturient Apoplexy after abortion occurred in July last. The animal affected was a shorthorn cow, about seven or eight years old, in good condition, and about seven months gone with calf; but still giving daily a few pints of milk. Prior to her illness she had been fed on mashes of bran, meal, and brewers' grains, with hay, and had also been turned out to grass several hours daily. She aborted without difficulty on the Monday evening; on the next night she did not appear very well, and as the placenta had not come away, a dose of Epsom salts was administered. The following morning she was much worse, lying constantly and moaning. With difficulty she was made to rise, but she stood for only a few minutes, shifting her hind feet uneasily all the time. She was bled and had a stimulant administered to her, and a fresh-flayed sheep's skin applied over the loins. By noon, when I saw her, she was lying on her left side, comatose; breathing stertorous; pulse, strong and full, numbered seventy; the bowels were acting freely, but the bladder was distended, with the placenta protruding several inches. Occasionally the respirations ceased for a few seconds, when a noise like the eructation of gas from the stomach was heard; there was, however, very little Tympanitis. No appreciable alteration was observed in her condition until the afternoon of the next day, when she died. No opportunity for making a *post-mortem* examination was afforded.

I recollect seeing, some years ago, another case very similar to the above, but unfortunately I did not take any notes. The animal was a cross-bred shorthorn cow, an extraordinary milker, which had aborted a six or seven-months-old fœtus. The following night she presented all the symptoms of Parturient Apoplexy, and was slaughtered next morning, as she appeared likely to die. I believe cases of Parturient Apoplexy after abortion to be rare, hence my venturing to record these two cases. There was nothing in the symptoms or progress of the disease unusual to note or to distinguish the cases from others which

occur after the full period of gestation, except that in one case the placenta had not come quite away. I shall not attempt to offer any new theory, or determine which of the existing theories will best explain the fact of this morbid condition occurring after abortion. But as facts must lie at the foundation of all true science, I content myself with chronicling them, leaving the explanation for abler pens than mine.

VAGINAL CYSTOCELE IN A SOW.

BY A. E. MACGILLIVRAY, V.S., BANFF.

ON the 14th of May last, I was sent for in a hurry to go and see a large and valuable sow whose "bed was coming out," and, as she was within a day or two of littering, the owner was afraid he would lose her. I found on examination that it was a case of Vaginal Cystocele; the superior vaginal wall was protruding in the form of a large glistening tumour, and on exploration I could easily discover that it was the bladder and not the uterus which was inside this tumour and, in fact, composing it.

The sow was every now and again making rather severe expulsive efforts, but passed no urine. The os uteri was well back behind the tumour, and quite firmly shut. The bowels were costive.

The sow being in a recumbent position, and it not being considered advisable to raise her, I found it a rather difficult matter to reduce the prolapsus; however, after considerable bathing with warm water, and pretty severe retropulsive pressure on the tumour, I managed to accomplish a reduction. The sow immediately got on her legs, passed "oceans" of urine, and partook of some gruel.

I told the owner that under the circumstances the insertion of sutures in the *labia vaginæ*, to prevent a return of prolapsus, was utterly inadmissible; so I ordered some tannin and opium ointment for the passage, gave a laxative, and showed the attendant how to reduce the tumour every six or eight hours to allow the escape of urine.

Quite late on the night of the 16th I saw my patient, and

found on exploration that labour would soon take place, the os uteri being then slightly relaxed. Not finding it convenient to remain myself, I gave the attendant, a very careful and experienced person, directions how to proceed. Between one and two o'clock in the morning of the 17th the first pig was brought to light, and by ten o'clock forenoon the poor sow was safely delivered of a round dozen youngsters. She pigged some of them of her own accord without assistance, but required attendant's help to get rid of several of the others. One only was lost, through remaining too long in the vagina, the attendant having left for an hour or so.

I expected the prolapsus would now partially disappear. Not so, however, for it still continued requiring to be returned before every micturition. She had a fair quantity of milk, and the great point now was to get her to hang on till such time as the pigs were able to support themselves on artificial food.

Every attention and kindness was given to the sow; but, after seven or eight days, the prolapsus began to get worse, considerable surrounding œdema setting in; so that on the 27th May, seeing no signs of ultimate recovery, but the opposite, and finding the young pigs beginning to feed out of a trough with avidity, I ordered the "old lady" to be slaughtered as she was in prime condition.

On *post-mortem* examination I found, with the exception of prolapsus, everything healthy except the two kidneys, and curious to relate, they were completely infested with myriads of small tubercles containing purely tubercular matter. Did the irritation produced by this abnormal deposit have anything to do with the occurrence of the prolapsus?

CATTLE PLAGUE IN INDIA.

BY A. E. QUERIPEL, M.R.C.V.S., R.A., ON SPECIAL DUTY IN THE PUNJAB, INDIA.

As veterinary science and organization are now to a certain extent occupying the attention of the Government of India, and as the pages of the VETERINARY JOURNAL have from time to time

been opened to the members of the profession for the discussion of this highly important subject, I feel that scarcely any apology is needed to lay before its readers the following sketch of one of the most extensive and fatal outbreaks of Cattle Plague which has lately visited the Punjab. This outbreak has in many instances exterminated whole herds of cattle, leaving villages without any bullocks for agricultural purposes, and at the same time ruining thousands of zemindars or landowners.

In March last I received intimation that I had been placed on special duty under the Punjab Government, for the purpose of investigating and devising some remedial measures for a disease which had been, and was still very prevalent amongst cattle in the Rawalpindi division. The first steps necessary to be taken were those which would throw some light on the nature of the disease, and would thereby enable me to recommend measures either sanitary or curative. With this object in view, I visited the commissariat cattle, which were then suffering to a great extent, and I also inspected various villages within a circuit of fifteen miles from Rawalpindi. I had not to proceed far with these investigations, before I felt fully convinced that the outbreak which had to be combated was that known as Cattle Plague. These visits, however, disclosed other facts, the most important of which was that I had to deal with a people totally ignorant of the simplest laws of sanitation, too apathetic to watch their own interests, and consequently too indifferent to consider for one moment those of their neighbours. What, then, was the state of affairs found to exist? On entering a village, the lumbardar, or headman, invariably reported about 50 to 75 per cent. of the cattle to have died. On every side the zemindars, or small farmers, were to be seen idling, having in many cases no bullocks left with which they could till their land.

The surroundings of the village were strewn with bones and carcases, amongst which a few healthy bullocks would be grazing, only to return to the village, perhaps that night, infected with the virus of the disease, and thereby adding to the miseries and losses of the people. Orders had been issued by the deputy commissioners to the effect that all cattle affected with the disease were to be immediately isolated. This, on making

inquiries, was always said to have been carried out. Let us, however, for one moment look at the mode of isolation practised. In a yard about five yards square would be, say, ten bullocks, half of which number were suffering from the disease, the other half being still healthy. The affected animals were placed in one corner, whilst those as yet unaffected almost touched them. On attempting to show the owners how fruitless this system was, I was invariably met with the reply, "What is the use of doing anything? it is our kismet (or fate)!"

Having now ascertained the nature of the disease and the general working of sanitary and other measures adopted for the purpose of checking its progress, I made inquiries as to the extent of country over which it prevailed, and found that in the Rawalpindi division alone every tehsil or subdivision was affected. The total area of these seven tehsils is 59,994 square miles, and in one alone ninety-seven villages were suffering from the ravages of this fatal malady. It then appeared quite clear that it would be impossible to visit them all, and I therefore framed twelve rules, which were translated into Uran and Punjabi and circulated into every village. These contained such measures as segregation, which was to be carried out under the strict supervision of the tehsildars or local magistrates, the headmen and the police; burial of carcases and prohibition of traffic in hides; strict isolation of any affected village. Having now endeavoured to establish some little organization, it was deemed advisable to leave the districts to themselves for a short time, and then to make casual inspections to see whether the above-mentioned sanitary measures were being carried out. This was further rendered necessary as a more important duty had to be performed on the main roads between Jhelum and Peshawur, and Rawalpindi and Thull—a distance of about 350 miles. The Afghan war was then at its height, and the troops depended almost entirely for supplies on the commissariat carts. On the Peshawur line about 5,000, and on the Thull line about 3,000 carts were employed, or in rough numbers about 32,000 head of cattle were daily working on some portions of these roads. Disease was very rife, and the mortality very great, and it was plainly evident, by the various reports received, that

unless some very stringent measures were adopted, the transport train would break down, and had this occurred I need scarcely say that the consequences must have been most disastrous. The mode of progression in this country for carts is to march stage by stage, at each stage a piece of ground is allotted, where the carts remain until the next day, when they start again. The total absence of anything approaching sanitation or organization, as far as disease was concerned, was really most pitiable to behold. At every few paces dead animals were to be found, some in such an advanced state of decomposition as to pollute the atmosphere for a long distance, while on every encamping-ground were to be seen numbers that were dying; in fact, every phase and stage of this fatal malady were to be noticed. It will be at once seen that these halting-places were thoroughly impregnated with the virus of the disease, and served as centres for the dissemination of the malady. I also discovered that the villages bordering on the Trunk Road were suffering greatly, and that it was customary to drive affected herds along the road to their grazing-grounds. My first attention was turned to the encamping-places, and, after much consideration on the part of the district authorities, they were, in many instances, ploughed and disinfected, whilst in others, and wherever practicable, they were abandoned. But still it was felt that this would prove futile until we could make certain that infected cattle were not permitted to be placed upon them. Sites were therefore selected in proximity to each encamping-ground, in which any cases that were discovered amongst the cattle were isolated. The police were instructed to prevent any animals that showed the slightest signs of illness from going on these halting-grounds, or from proceeding on the high road; they further received the strictest orders to cause all carcases to be immediately buried, the hides having been previously slashed. These and some other minor arrangements had the desired effect of causing an abatement in the disease amongst the commissariat cattle. The losses have, however, been enormous—in fact, the extent will never be fully known. Statistics have been as carefully prepared in this division as the large extent of country would permit, but the number of deaths, I feel convinced, do not in any way show the approxi-

mate mortality. From observations made in various localities, I would say that the zemindars have alone lost 60,000, whilst the loss sustained by the various contractors of the commissariat train cannot be computed at less than 15,000. The Government bullock train, employing 1,200 head of cattle, sustained a loss of 800; while again the slaughter animals belonging to the commissariat suffered greatly. It must be remembered that the above only represent the losses of this division; the disease has been very widely spread in the Peshawur district, and when in Wazirabad I found that nearly 5,000 had died from the fatal malady.

What, then, are the consequences of this great mortality? They are, that the revenue suffers greatly thereby; there are numerous villages in which scarcely a single bullock can be found, and in India each small landowner keeps sufficient head of cattle to till his ground, and when not so employed they hire them out for draught purposes. The bullocks having died, the land in many instances must lie fallow, and I feel certain that the percentage of cultivated to cultivable land will be much less this year than it has hitherto been. The price of grain, already at famine prices, will be further increased, and the people, reduced to still greater poverty, will be unable to pay their taxes, and thus the revenue must suffer to a great extent. These points will, I trust, soon be considered by Government, and it is to be hoped that the day is not far distant when a thorough system of veterinary organization will exist in the Punjab. The vast extent of country would render it impossible for veterinary surgeons to be solely employed; it therefore remains to be seen how their place could be filled. The question of the appointment of salutrees, or native veterinary subordinates, is being urged upon Government. These men, properly selected and trained, would be most useful when sent into the districts if they worked under the instructions and personal supervision of a veterinary surgeon, and it is evident that until this system is adopted the country cannot possibly be protected from these most terrible losses. Government has already seen the necessity to a small extent, and has granted authority for the appointment of six of these men to aid in the suppression of Glanders and

Farcy. Great hopes are therefore entertained that this important question will be more fully dealt with from time to time.

Although no new light can be thrown on the nature of the disease, still the above remarks would be incomplete without a slight description of its history and nature. It would be a matter of impossibility to trace the source of the present outbreak, especially as the disease had existed for nearly five months before Government decided to have recourse to veterinary aid. It will, however, be seen that owing to the Afghan campaign, cattle from every part of the country were collected in the Punjab either for draught or slaughter purposes; and it can therefore be readily understood that infection may have arrived simultaneously from various centres. There is, however, one point to which my attention has lately been drawn, but of which time has not allowed thorough investigation. The exportation of hides from Cashmere into India at the close of last year was reported to have been very great, and Cattle Plague had previously been very rife there. These hides would have to pass through various parts of the Punjab, and believing as I do that the subtle virus of this disease may be conveyed in this manner, recommendations have been made to Government that the traffic in hides should be interdicted when this traffic is noticed to be excessively large, and when traceable to any contagious malady being prevalent in any particular district.

The symptoms of the disease have been very similar to those which are noticed in most other countries, except that they were less marked. The primary stages of the disease are in the majority of cases most difficult to detect, and in many nothing would assist one's diagnosis but the thermometer. Great heat would appear to keep the disease in a great measure in abeyance; but slight rain, when the atmosphere is impregnated with moisture, assists its development to a very great extent; while, again, heavy rain has had a most beneficial effect in checking its progress. The absence of any cutaneous eruption has been generally remarked, and although I may say thousands of affected animals have come under my notice, yet I cannot call to mind a single case in which the skin has shown any signs of eruption until quite lately, when engaged in an outbreak

amongst the commissariat pack cattle, and nearly in every instance the peculiar cutaneous symptoms have been noticed. They have appeared on all parts of the body, but mainly around the muffle, and in other places where the skin was thin. These eruptions appeared first as if desquamation of the epidermis had simply taken place, but subsequently there formed little vesicular elevations which, on bursting, discharged a viscid fluid that caused the hairs to adhere to each other. In cases in which death did not speedily ensue this was followed by the hair falling off the various parts.

In addition to this wide-spread and most fatal outbreak, the country has also been visited very severely by Foot-and-Mouth Disease, and I regret to say that, owing to the ignorance of the natives, the mortality has been very great.

It was not my intention to have entered so largely into this subject, but the reflection that there is such a wide field for the veterinary profession in this country, and the knowledge that veterinary organization is so much needed, leads me to hope that I may be excused if I have trespassed too much—first, on your space; and secondly, on the patience of your readers.

MONSTROSITIES.

BY PRINCIPAL WALLEY, ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

THE past season, prolific as it has been in natural and other monstrosities, has been none the less so in the departure from an anatomical standard in the offspring of animals; and in the great majority of cases which have come under my notice, this departure has been in the direction of deficiencies.

The most common form of monstrosity in foals is the Nanomelus, *i.e.*, deficiencies and distortions of the limbs. Several instances of this kind have been observed in Fife by my assistant, Mr. Wm. Reekie; and a very marked one—in which the *pedis navicular* and *os corona* were entirely absent, and the upper half of the *os suffraginus* alone developed—in the hind

limb, was recently forwarded to me by Mr. F. J. Powell, of Gamlingay.

In this case the animal, by the urgent request of the owner, was allowed to live several weeks.

The following notes of a distorted, monstrous calf may not be uninteresting to the readers of the VETERINARY JOURNAL, more especially as, in addition to the deformities, congenital round-celled sarcoma of the lower jaw, with imperforate anus and a recto-urethral communication, existed.

Subject.—A well-nourished male calf, two days old, came into my possession through the kindness of Mr. Marks, at Messrs. Oliver's Mart, where it had been exposed for sale.

Head resembled that of a bull-dog, nasal and anterior maxillary bones being very short and muzzle square.

Ears half the normal length and truncated.

Eyes very large and resembled those of the seal.

Legs anatomically perfect but very short, and presented the characteristic deformities of Rickets, the joints being apparently enlarged from shortening of the bones and thickening of their distal extremities. On section the zone of proliferation was perfect and the bone tissue normal, the shortening and deformities being due to muscular spasm or to intra-uterine pressure. The greatest amount of curvature existed in the femurs, radii and ulnas ; but while the fore-legs were practically useless, the animal could raise its body upon the hind limbs to a limited extent.

True vertebræ perfect ; *sacrum* absent.

Coccyx very imperfect, and situated at posterior part of lumbar region.

Anus imperforate.

Urino-genital organs normal, except the urethra, which had a sphincter-like communication with the rectum, through which a small quantity of semi-fluid meconium was discharged.

Ramus of left inferior maxilla enormously enlarged, round in contour, and of a dark blood-colour ; compact structure bulged and thinned ; pressure gave rise to egg-shell crackling, in some places nothing being left but the periosteum. On incising the bone and applying compression, large quantities of blood exuded from the incision. Interior of the bone was loculated, the

loculi containing a large amount of semi-solid gelatinous material of a deep red colour, which, on microscopical examination, was seen to consist mainly of embryonic cells.

Suppurative inflammation of the urachus existed.

I could gain no particulars as to the health of the mother, but the condition of the jaw, with the inflammation of the urachus, pointed undoubtedly to mal-nutrition. The creature evinced signs of great suffering by constant straining.

Editorial.

UNFAIR COMPETITION.

Our readers will have observed that for some months an agitation has been going on among the members of the veterinary profession, chiefly metropolitan practitioners, with reference to the unfair system of competition maintained towards them by the Royal Veterinary College, known as the "subscription system." As is well known, and as so many veterinary surgeons find to their cost, that school advertises that for two guineas a year it will examine twenty horses for soundness, give advice with regard to an unlimited number, receive into the school hospital and treat sick horses, as well as sell medicine, at cost price, shoe horses for a smaller sum than the ordinary farrier can, etc., while for five guineas per annum an indefinite number of horses will be examined, and all the other privileges guaranteed. In fact, it offers to do what no practitioner could afford or dare to do, and undersells its own students to such an extent that it is not only impossible for them to compete with the cheap establishment, but the bread is actually taken from their mouth by this so-called *alma mater* of theirs. It has been said by some political historian that French revolutions eat up their own children. The London Veterinary School does this, and more; for it first charges them heavy fees for teaching, then starves and swallows them.

The system can certainly boast of a long history. The school was commenced as a subscription establishment by an obscure agricultural society nearly ninety years ago; but then it only had ignorant and illiterate farriers to compete with, and two guineas in those days were worth very much more than they are now. Had the school never been begun on this system, there can be no doubt that later it must have been established by the country for the benefit of the country. In this case veterinary medicine would have all along stood in a very different position to what it has done and now does, and millions of pounds would probably have been saved. The subscription system has undoubtedly proved a most serious drawback to veterinary science in England, as its history proves. The school has done little, if anything, to promote that science; it has never produced a scientific teacher, and never will on its present footing; its teachers have been little more than practitioners,

whose principal functions were to "doctor" subscribers' horses or to attend to subscribers' interests; the students who entered the school have all along suffered from their and the subscribers' interests clashing, and clinical instruction there has been none worthy of the name, as the subscribers' horses could not be made available, and no others were admitted within the gates; neither in the form of text-books or in other ways has the school benefited the profession, and its existence as a scientific institution is ignored by other countries.

The teachers, to exist, have been compelled, it would appear, to practise their profession beyond the walls of the school, and thus neglect the students, who seem to be only a secondary consideration in the speculation, and are chiefly valued as contributors of fees. The Governors are an honourable body of gentlemen who have been easily led, and more easily misled and, thrown entirely upon the mercy of the Principal of the School, have known nothing of the requirements, grievances or position of the profession.

A desire to get hold of money has been the bane of the school, as it has been its chief aim, and hence the degrading subscription system, and the determination to continue and extend it—no matter who suffers, or whether it deprives the veterinary surgeon or blacksmith of their means of livelihood. Surely the noblemen and gentlemen who lend their names and patronage to this school are not aware of the fact that it is not a scientific institution, nor yet a college, but merely and mainly a great co-operative "horse-doctoring and horse-shoeing" concern, devised to benefit wealthy subscribers, having nothing to do with the introduction of humane or improved methods of treating diseases or accidents, and doing its business on shamefully cheap principles!

We may be told that the subscription system is necessary to the existence of the establishment, and that without it it must perish of inanition. If such a statement is correct—and we do not deny its correctness—then it reveals a very discreditable state of affairs. No other veterinary school in these islands requires to resort to such an ignoble stratagem to live; no medical school does or dares to undersell practising physicians or surgeons—in fact, the London Veterinary College is the only medical or veterinary school in Europe which, like a huge parasite, lives and grows at the expense of its students—past and present.

Not only does the subscription system most seriously injure the practice of the metropolitan practitioner, it also affects the provincial veterinary surgeon, as subscribers are all over the country, and avail themselves of the degradingly cheap services offered by the school.

It is impossible for any one who cares for the reputation and advancement of veterinary medicine in this country, and the deserved prosperity of its practitioners, not to sympathise with the movement which has been begun—even at this late period.

The cheap subscription system has been the curse of our science, and its malignant influence can be traced through long years and in many directions. It is unprofessional in every sense of the term, is derogatory and damaging to veterinary medicine, most injurious to

metropolitan and suburban practitioners—its own *alumni*—in every way disadvantageous to the students, and a discredit to the Governors and the country. Had the profession not been for so many years blind to its own best interests, surely the action now commenced would have been begun long ago. And surely the gentlemen whose names are borrowed to maintain the system, would at once withdraw them, or propose some more honourable and creditable mode of continuing and conducting a school which should not only be a benefit but an ornament to our land, did they only know the real facts of the case.

We move in the matter without personal feeling or rancour. Our object now and always has been to raise, advance and protect the veterinary profession, and foster the growth of veterinary science in our midst. In assuming the position we have done in this question, we are only acting up to the principles which have guided us hitherto and with so much success; and we have every reason to hope that if the profession is only true to itself, the odious system of competition which eats like a cancer into its heart will be abolished, and a more praiseworthy way of promoting veterinary science adopted. In this immensely wealthy country, with its invaluable studs, herds and flocks, surely a better system can be afforded than that of pretending to promote veterinary medicine by starving its practitioners, through underselling and acting unfairly towards them.

If veterinary surgeons had the courage, the unanimity, and the *esprit* of the medical profession, this unfair competition would have been extinguished long ago, and our science would have been in a very different condition indeed.

STABLE MANAGEMENT OF TROOP HORSES IN INDIA.

(*Continued from p.* 197.)

Site.—The site for Indian troop stables should be selected on the highest and driest position, out of which there is drainage, and into which there is none: take advantage of natural formations, for though there is an elevation of only two feet above the general level, a solution to the drainage question has, to a very great extent, been gained, and the channel diminished by which many causes arise to interfere with equine health and general sanitation. Avoid the site of old stables or buildings.

Lacking natural or geographical facilities of elevation, and presuming that other circumstances render it expedient to erect stables, the ground actually concerned should be raised at least two feet, not by excavating or removing the surrounding or adjacent earth to do so, but by carting it in from a convenient distance and untainted locality.

Soil.—It should be selected for its firm and adherent properties, which enhance the power to resist permeation. Unfortunately there is not much room for choice in this matter, and that which would be most recommendable is difficult to obtain, the universal nature of the soil of India being *alluvial*, and not fitted for all parts of stable flooring. As a rule, dry soils, whether permeable or impermeable, are healthy, but no soils are absolutely impermeable to water. The less organic matter a soil contains the more healthy will it be. A gravelly or calcareous surface would be a wise selec-

tion. A sandy surface without depth, and a clayey subsoil which retains moisture, would not be a judicious one. The cotton soil of India cannot be recommended. Whatever be the nature of the soil generally in the locality, we advise that that intended for the groundwork—flooring—of both inner and outer stables should be *prepared*, if not procurable ; and as some clays are as impermeable to moisture as the hardest rocks, an admixture of clay and sand, in the proportion of one of the former to ten of the latter, would be admirably adapted for floorings, for the addition of even one-twelfth part of clay to sand checks in an extraordinary degree the percolation of water. There would be no very great obstacle in the way of accomplishing this. Such a mechanical composition will make an excellent flooring material when properly laid, rammed, and allowed to settle before use.

Handy to the site should be a plentiful supply of water, and of course the purer the better. It should always be at such a distance from the stables, other habitations, drains, cesspools, urinals and the like, as to preclude soakage and contamination therefrom. Of water-supply we shall speak more fully elsewhere.

Troop stables ought to be within easy access of the men's barracks, though not within three or four hundred yards, the intervening space being as clear as possible. The facilities for or difficulties of drainage, as also the position, quality and quantity of adjacent vegetation, woods, forests or clusters of trees, as well as external ventilation, are to be well considered, for to these most other things ought to be subservient in building Indian troop stables.

As far as drainage is concerned, provision must be made for the escape of surface-water, and for that which passes into the soil and subsoil, particularly where the rainfall is heavy. Those portions of the surface on which rain can fall from buildings should be paved or otherwise protected to prevent wear and soakage into the foundations, and water should always be carried off as rapidly as possible. Herbage is always healthy. In India it should be encouraged about all habitations, and kept in check by grazing—not by "cheeling;" it prevents the ground becoming hot by obstructing the sun's rays, and cools it by aiding evaporation. Nothing is more desirable than to cover, if it be possible (it often is not), the hot sandy plains with closely-cut or grazed grass. Avoid brushwood, and if necessary to build about it, remove it, disturbing the ground as little as can be.

Disposition of Stable Ranges.—If ventilation and sanitation are to be kept in view, the ranges of stables should run *en echelon*. This arrangement, being adopted as the best for building barracks, must, on the very same grounds, be regarded as the least objectionable for stables.

Aspect.—There is a difficulty in arriving at a conclusion on this subject that shall not be open to some objection, but where aspect has not to become subservient to immoveable surroundings, in the shape of barracks, buildings of sorts, and the geographical formations of the locality, an eastern and western aspect presents the fewest disadvantages—that is to say, no better plan can be devised than by building stables broadside on to the prevailing, and end on to the deleterious winds, if these blow from opposite quarters. It is here implied that the prevailing winds of a place are *in themselves* healthy, and we believe this is invariably true.

Yet there is not much fault to find with north-east by north, and south-west by south aspects, speaking of double ranges. Single ones should be open to the south, and have the north and end walls liberally ventilated. But in all aspects an echelonic construction must be insisted on, and a sufficiency of space allowed in, between, and around the stables. Our plans (which cannot well be here introduced) show the permanent stables running, *en echelon*, from south-west to north-east, with north-west and south-east

aspects. An interval of 100 yards separates contiguous angles of the ranges. The open or terraced lines are disposed entirely away from the covered buildings, that is, they are not constructed *between* the ranges, but run 50 yards from their outer corners on each side, due east and west, having north and south aspects. They may be said to run along the ends of the permanent stabling. In this way, not only is there a distinct division between each troop (speaking of cavalry), but each horse would enjoy, when picketted out, nearly double the space he would under cover, for half a troop would be disposed in two rows on one side, and half in two rows on the other—a decided advantage on sanitary grounds, as well as for grooming and inspecting purposes.

It is here troop horses should be picketted during the sunny part of the day in the cold season, and during the hot nights and more or less cool mornings and evenings of the hot season. The whole to be raised not less than 18 inches above the general level, and to slope rearwards at the rate of three per cent. Trees to be planted down the centre of these outer standings. Width over all 48 feet, picket 9 feet from and on each side of the trees, and thereby allow a depth of standing-room of about 15 feet.

Division and boundary walls are not requisite; indeed their existence is a decided disadvantage to surface ventilation. Mangers can also be dispensed with, and feeding-sheets, to be afterwards described, would be excellent substitutes. Advantage should be taken of the ample space offered in these outer lines. Move the horses periodically one or two yards to the right or left of their present position, and back again, thus giving the soiled parts a relief and a chance of aerial and climatic disinfection. These may appear to be of minor import, but upon them hangs a tale of weal or woe. In the hot and rainy seasons have the horses outside every available hour, and the oftener their ground can be changed the better. Duplicate, and even triplicate outer lines are invaluable. If at all possible, keep the horses' heads away from a strong sun, and the covered lines free of inmates as much as is consistent with shelter and protection.

Manure Pits.—There should be about five on each side the whole of a cavalry block, placed convenient for the inner and outer lines, walled on three sides, and 9 feet square each. Earth flooring does well enough. As their contents must be removed every morning (or oftener) soon after daylight, their position need cause little anxiety so long as they are placed as far from the horses as can be, and well clear of the water-supply. Thorough and daily clearing and cleansing must be insisted on. Latrines and urinals for Europeans and natives would be better entirely outside the boundary of stables.

Material.—The materials with which it is proposed to build the troop stables now under consideration, are to be wrought and cast-iron, and wood; but there can be no practical objection to the use of stone, well-burnt bricks, or wood for the pillar supports or columns, provided their numbers and dimensions are reduced to about half or one-third of those at present blocking up our troop stables, whilst sufficient strength is maintained and more regularity preserved.

Strength and Durability.—To secure these, the nature and quality of the material must be studied, as well as the form and dimensions it shall assume. Wrought-iron alone should be employed if perfect immunity from danger and accident is desired, and for pillars, posts and fittings that are most exposed to the direct force of kicks, or are at all liable to meet with rough usage from any source, this material is recommended as possessing the qualities we seek in the highest degree.

Cast-iron posts are usually so light in structure as to be unfit to bear the impact of the sharp blows from a horse's shod hoof, and though they

look massive, they have no inherent strength, and are easily fractured. With respect to the columns and the very few fittings recommended for these stables, we would dispense with projections, flutings, brackets, points, nuts and screw-heads, and all prominent and sharp edges within reach, and against which horses might rub, strike or hurt themselves. All accessible surfaces should be round and smooth.

Calculations and measurements, which will hereafter be given, will be approximate, for though we shall endeavour to be precise, an error may creep in.

The wrought-iron columns which are carried up to the roof for structural purposes are the main supports, each having a diameter of 6 inches. The same diameter should be preserved throughout, or if decreased, the tapering should be slight, and even then there must be no sudden reduction. The base of each should be deep and long, expanding *cone-wise* to the bottom. To fix it, concrete only is required, which, if well rammed, will keep it firm and rigid. This self-fixing base is an improvement on the ordinary one fixed in stone with lead and Lewis' bolts, and also less expensive. Wrought-iron pillars (particularly if large) are much more costly to manufacture than cast ones of the same size, expensive machinery being employed, but their higher price should not hinder their adoption, as the value of wrought, compared with cast-iron, in work of this nature is infinitely greater than can be represented by mere figures.

For harness and saddlery, which cannot be kept in stables without injury from dust, dirt, moisture, and corrosive gases, brackets will be dispensed with —they are not essential even to hold the saddlery as a temporary measure ; besides, the harness and saddle-room will be contiguous and therefore convenient.

Size of Ranges, Stalls, Passages and Verandahs for a Regiment of Cavalry.—Each range is double and made to hold forty horses on each side, a spare stall or two being a useful addition. For R. H. A. and R. A., each range could be constructed to hold sixty and fifty-six horses respectively, three ranges for the former, and two for the latter.

Each stall to be 15 by 8 feet, exclusive of pillars, to which add 6 inches more. A centre passage dividing the two rows of horses is 7½ feet wide, clear and exclusive, whilst a verandah 7½ feet wide on each side projects beyond the base of the stall.

Wrought-iron pillars should be made from plate-iron of the best quality, and have a large base cast inside them, as well as the cone-shaped base outside. So firmly do the wrought and cast-iron portions unite that it is impossible to sunder them even when subjected to the severest test. We see no reason to weaken these columns by screwing in rings or other supposed conveniences and objectionable projections.

Roofs.—To be double, the outer of corrugated sheet-iron, galvanized, the inner of varnished wood, pine planking, or any wood deemed fittest. They will run parallel to each other at an angle of 45 degrees, being separated by a space having a perpendicular of about 20 inches. The inner roof extends from the rear column-heads, and ceases at a point drawn upwards from, and perpendicular to, the front columns, whilst the outer one, terminating (relatively) at the same place—that is, a point higher up the perpendicular,—continues its slopes 7½ feet beyond the rear columns to form a verandah. An opening, 7½ feet wide, will be left in each ridge, corresponding in width, and being immediately over the central passage.

This opening, which affords ample ventilation from the stable and ærial currency through the inter-roof space, is to be covered by a smaller (ridged) roof of corrugated galvanized sheet-iron, which will overlap the outer one sufficiently deep to exclude drifting rain, whilst it is raised 18 inches above it.

Varnish on the inner surface of the lower roof is recommended for its preservative effect on wood, as well as for preventing or checking absorption of deleterious gases, germs, virus, etc. ; it is also easily washed or cleaned, and is in many ways sanitarily useful.

The horizontal spanners, length and breadth-wise, connecting the column-heads, the rafters, and other roof-supports, are of wood, but a well-balanced combination of wood and iron could be employed. We propose to add to the protective character of the outer roof by attaching to its lower edge a perpendicular and ornamental iron curtain, terminating about 8 feet from the ground. There would be ample space for safe ingress and egress, and the curtain would exclude drifting rain to a considerable extent. The roof extension forming the verandah and curtain are supported by round iron brackets from the rear pillars. The north-east gable peak might be surmounted by a wrought-iron vane, with copper dart and letters.

Unless it were considered that the wind pressure would be too powerful and dangerous, the inter-roof space is not to be closed in at the ends of the buildings.

Saddle, Harness, Grain and Store-Rooms.—Each range is to have its own two saddle or harness-rooms at one end, and its grain and store-room at the other. The former to be at the ends nearest the barracks so as to be handy for the men getting their saddles, etc., on going to, and leaving them or going from, stables. The grain and store-room to occupy the opposite ends on each side the passage, like the saddle-rooms.

Gutters and launders are not recommended, as they would be useless to carry off monsoon rains, and would only get choked up with dirt and leaves, or by bones dropped on the roof by the birds.

It is argued that galvanized iron roofs become very hot. True, but they become cool as soon as the source of heat is removed, and do not retain and accumulate it for weeks or months like thick layers of mud and tiles, and masonry of sorts.

It may also be said to become very cold, but the inner roof, with the inter-roof space, fairly obviates or modifies the influence of heat and cold on the horses below.

Thatch, if thick enough, or if covered with tiles, is, perhaps, the coolest roof ; but neither thatch nor tiles nor their combination can compete with iron for cleanliness, lightness, strength, durability, economy, and protection from fire and climatic causes. Flat or terraced mud roofs are too low, and with or without kunkur admixture conduct heat too freely, and part with it too slowly. Though thatch under tiles is a very cool roof, a reversion of the order of these materials makes a cooler one, but increases the danger of fire, and harbours birds and vermin. Arched or bomb-proof roofs are better than flat roofs if they can be properly ventilated.

Drainage, Floors and Flooring.—The system of subterraneous drainage is inexpedient for every reason ; it engenders nothing but foulness and diseases of a very virulent type : it must never, on any plea, be allowed. Our troop stables in India must of necessity be surface-drained, so to speak, but as this is here somewhat anomalously applied, we had better explain that fluid evacuation must either be caught *as it falls* from the horses—practical to a very great extent—or be at once scraped together with the earth fouled, and removed to the manure pit without delay.

During the night this cannot be done, but no time should be lost in the early morning, after removing the bedding, in digging or scratching up every particle of soiled earth, and well ramming in fresh, a supply of which should always be kept handy and under cover. An ordinary urine cart should be sent round the stables twice daily to take away the urine caught. Percolation must be studiously prevented, and the dry-earth system scrupulously

carried out in the stable floors. Patent wrought-iron surface-gutters are out of the question, firstly because there can be no satisfactory outside drainage in communication with them ; and secondly, because we cannot employ any of the useful paving materials as in England, except at an impracticable expense, unless they could be locally manufactured. We are therefore compelled to discard the use of patent non-absorbent bricks with their chamfered edges, grooves and checks, Welsh and Staffordshire paviors, Dutch clinkers, and granite pitching, and look to the resources of the country for flooring materials, which are absorbent, permeable and percolative. These, of course, are serious disadvantages against which veterinary sanitary science has to contend. Kunkur, which generally occurs in rough, irregular nodulated pieces, and is an impure calcium carbonate, is occasionally used as a flooring for stables. For this purpose it should, first of all, be reduced to the size of coarse gravel, and might be improved by adding a proportion of cement to assist in concretion and to increase impermeability. It should be exceedingly well rammed whilst drenched with water, and be allowed a fair time to dry. The layer ought to be not less than 9 inches thick, and its surface, when finished, ought to be as smooth and uniform as a stone pavement. It is however, quite fallacious to employ kunkur alone for stable flooring, for though it can be smoothly faced, its interstices cannot be entirely occluded by ramming : it soon affords ready percolation to urine, and besides, by constantly receiving the fall of that fluid from a height of from three to five feet—usually voided with force, and falling generally in the same place—the kunkur is washed into depressions and unevennesses, which, by-and-by, when percolation has been succeeded by saturation, form into reservoirs of fluid filth, giving off poisonous effluvia. The continual movements of a horse in his stall, attrition by stamping or turning, the frequent sweeping by the *syce*, add in no little way to the removal of the finer surface, leaving rough and sharp projections which are injurious to horses when lying down. It may be said that bedding would prevent all this, but if that were constantly used, the horses would be standing on wet and foul grass or straw. There would be considerable waste, the floors would never be dry or free from smell, the frogs and feet would never be sound or clean, the permeation would be more diffused—and it is well to remember that bedding is not always procurable.

Again, a kunkured floor, to be serviceable, must be kept in repair, and be repaired with kunkur. The *syce* cannot do this, though it may be expected of him—it requires special workmen. The *syce* can fill up cavities with ordinary earth, and ram it down, but then the character of the floor is at once destroyed.

As the surface of most stations consists of alluvial soil, and as its character is considered to be more or less malarious, from, we suppose, its holding so much organic matter, it has been argued that kunkur might be advantageously employed as a substratum to flooring of the ordinary local soil—that it may possibly prevent the evolution of malarious vapours from the surface it covers. This, however, is a very feeble argument, because the extent of surface covered would be very trifling. Nevertheless, there is some, though not a sufficiency of evidence to prove that floors substratified or surfaced with kunkur have some influence in preventing the evolution of equine Anthrax (Loodiana Disease) in India, and the principal veterinary surgeon, Mr. F. F. Collins, is inclined to this belief, and we quote him from the VETERINARY JOURNAL for January, 1878 :—"I have found by the annual reports received from veterinary surgeons, that the nature of the soil at all stations where malignant fever shows itself is identical, viz., alluvial, with a clayey subsoil. On soils with kunkur (*Calcium carbonate*), and soils abounding in salts of soda and potash, also good arable loam, the disease never exists.

Alluvial soil is common throughout India, and I am endeavouring to get all stable flooring made impervious to moisture. The stables at Morar, where the disease used to be very prevalent, I have floored with rammed kunkur, and no case has occurred there since now two years."

Now, providing the annual reports are correct geologically, it must be admitted that Mr. Collins has obtained a good basis for prophylactic action; at the same time we do not conceive that these alluvial soils, *per se*—that is, without the co-operation of mal-stable management—can be held culpable so far as this. Indeed, we may venture to say that if those parts of stable floors formed of the ordinary soil of the locality, which have recently been fouled and saturated with the solid and fluid excreta of horses, are removed soon after contamination, and replaced by virgin earth, and that if over-crowding is avoided, the theory of the pathogenetic influence of soils can only be regarded in the light of a predisposing agency, and even this has not been very satisfactorily supported. What occurs when a battery of horses is removed several miles away from the position in which Loodiana Disease attacked it fatally? A sudden arrestation of the scourge! which will invariably reappear should the same horses return to the original site before sanitation has thoroughly changed the circumstances under which they were living at the time of the outbreak.

But we are digressing.

If the surface-drainage of stable floors has no communication with drainage outside, it will be obvious that an impermeable material—which means an immoveable and an uncontrollable one—would be the reverse of good, permitting fluids to spread over more surface than could be properly kept clean and odourless, or to lodge in parts that would never get cleaned at all. Concrete would be more impermeable than kunkur, but more expensive, less enduring, and more difficult to repair, yet it is not unfavourably reported on in England. And as neither one nor the other can bear the constant weight and attrition of horses' feet for any length of time, it is certain that we cannot find a better material for stable flooring than a soil which is permeable to a limited extent: one which will not allow very rapid percolation, giving time and opportunity, ere fluid soaks below the surface, for its entire removal. Nothing can be more suitable than a clay and sand mixture (the proportions of which have been given), which sets hard and firm after ramming whilst moist, and giving a smooth clean surface under proper manipulation. There is, too, an alluvial deposit called "chikna muttee," which, when suspended in water and applied to earthen surfaces as a wash, adds much to an appearance of cleanliness, and the natives think not a little to disinfection, for they use it freely to their dwellings, often mixing it with ox-dung, which imparts a faintly green tint to the compound. I believe the term "chikna muttee" means "greasy mud;" it has that feel, and is a sedimentary earth found at the bottom of stagnant water, or where water has been stagnant. As to its disinfecting power I am sceptical, and more so when mixed with ox-dung. However, as a wash to floors and walls it is useful in the hot, glaring sunshine of summer, the dull drab colour being more comfortable and less injurious to the horses' eyes than the constant glare of light reflected from white (lime) wash.

Earth flooring should always be well rammed whilst damp, and have ample time, if practicable, to settle; herein consists its serviceability. Though flooring should, for the comfort of horses, be as level as possible, and all slopes as slight as will serve the purpose in view, it is patent that a gentle fall rearwards of about three per cent is advisable. There should be no other slopes.

Of course it is the central portions of each stall that chiefly become foul; but all moist and discoloured spots should receive the attention before remarked, and this imposes a duty of constant supervision, but nothing whatever should

prevent its strict enforcement. Solid fæces should never be permitted to lie during the day, as there are always *syces* about to remove it, for not only the floors, but the feet and general health will suffer by its retention.

On sanitary grounds the earth floors are removed, to the depth of 12 inches, every six months (or should be), and replaced by fresh soil, and I would add that this is one of the wisest acts of sanitation that has lately been introduced into troop stable management.

I agree with Mr. Collins that floors impervious to moisture would be the best, and let us by all means have them if the drainage can be thoroughly accounted for, and Government induced to bear the expense.

Stone flags (bricks are too porous) set on and in cement, having a gentle slope towards the centre and rear, and connected by gutters with a small cemented cistern, one to two stalls, is the nearest approach I can think of to the employment of this country's resources. "Roads metalled with concrete, made of broken stone and hydraulic lime, have been successfully used in Scotland; a thickness of 6 inches has been found sufficient to stand a heavy traffic, and the plan seems well worthy of adoption in various parts of India, where good lime is abundant, and where vitrified brick might be substituted for stone if the latter is not available." (Roorkee, "Treatise on Civil Engineering in India," compiled by Col. Medley, R.E.) This might supersede the use of kunkur for flooring if the drainage question could be settled. There are patent bricks made by the St. Pancras Iron Work Co., non-absorbent, hard, and yet not slippery; when laid they form a series of small grooves sufficient for drainage, but not large enough to retain the dirt, etc., of the stable, and they are so formed that when worn on the upper surface they can be taken up and relaid without at all marring the effect of the paving. In all this class of impervious flooring, the drainage difficulty might partially be overcome by the adoption of dry-earth conservancy.

To enhance the cleanliness and healthiness of troop stables, we insist on the use of urine vessels, and recommend those of galvanized iron, one to two horses, and to hold about one gallon, instead of the present fish-globe-shaped earthen chatties, which are easily broken, and cannot be kept clean owing to their shape and absorbent properties. For uniformity, easy package and conveyance, they should be tumbler-shaped, so as to nest. They should be daily cleaned with sand and water. Vessels of glazed earthenware, each to hold about four gallons, one to four horses, should stand clear of the lines, and into them the caught fluid should be emptied, and they in their turn into the urine cart. Iron scrapers or koorpas, baskets and brooms are the only other stable requisites for keeping the floors clean and free from filth.

(*To be continued.*)

THE RESPONSIBILITIES OF THE VETERINARY SURGEON.*

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

WHEN a young man has undergone the prescribed amount of study at a veterinary school, and successfully passes the several examinations instituted by the Royal College of Veterinary Surgeons to test the progress he has made, and his fitness to practice the art and science of animal medicine and surgery, he becomes a graduate of that important corporation and a member of the veterinary profession. He will probably not have been long embarked in his professional career until he discovers what, in all likelihood, he has heard nothing of as a student, that if his diploma of graduation has

* Read before the Lancashire Veterinary Medical Association on October 15th.

conferred upon him some special and important advantages, the practice of his calling has also entailed upon him a number of responsibilities of a more or less serious and onerous character—responsibilities which he has assumed with his title, and from which he cannot be relieved but with the relinquishment of that title. I do not now allude to the more general responsibilities which devolve upon him as upon every good citizen, and which increase with the higher position a man holds in the social scale, but only those responsibilities which attach to him in the practice of his profession, and from which he cannot be exempted. These responsibilities are those he incurs in his relations with the public, with his professional brethren, and with his patients—the dumb animals to whose ailments he ministers, and whose welfare, in sickness and in health, is largely committed to his care.

The vocation of the veterinary surgeon is not without its attractions and advantages, neither is it without its difficulties and disadvantages ; and it is only through possessing physical and mental attributes of no mean order that the practitioner can pursue it with real success—with satisfaction to himself and benefit to his employers. In several particulars the practitioner of veterinary medicine has to encounter difficulties and obstacles which the physician or surgeon of mankind does not meet with. The absence of speech in the veterinary surgeon's patients ; their want of appreciation of the motives which cause them to suffer pain, restraint or inconvenience ; their oftentimes intractable or savage disposition, and their strength and means of offence ; the impossibility of inducing or compelling them to assume particular positions favourable to examination for, or recovery from disease ; the fact that owners of animals often expect far more from the veterinary surgeon in the search for or treatment of disease than they do from the medical man who attends their own species ; that pathological processes are often occult and insidious, and rapid or obscure in their progress ; and the responsibilities which, from these and other causes, attach to the acts and words of the veterinary surgeon : all these circumstances operate in rendering veterinary medicine a serious and a responsible calling, and one demanding an amount of general and scientific knowledge, address, tact and moral power which is not always devoted to it, and with which it is certainly seldom credited. Clear perceptive and reasoning powers, a quick eye, a finely educated and ready sense of touch, with strength, tact, agility, courage and other attributes must be combined with a thorough knowledge of the structure and situation of organs in health and disease, the nature and habits of animals—and in some their mode of progression, a deep acquaintance with anatomy, physiology, pathology and the treatment of injuries and maladies, as well as the causation of pathological processes and the principles of sanitary science.

In conscientiously pursuing his vocation, the veterinary surgeon, from the nature of the services he is called upon to perform, in the words of an esteemed colleague, "must assume an independent, upright position ; his opinion must be unfettered and uncompromised, and neither influenced by friendship, flattery or money, nor swayed by fear of offence, or threats of withdrawal of patronage." Only by upright and honest conduct, untiring perseverance, and the exercise of his knowledge and attributes to the best of his ability, can the veterinary surgeon hope to succeed in gaining that position which will entitle him to the respect and confidence of the public, and enable him to meet his responsibilities towards his clients with confidence, and the assurance that these responsibilities will be lessened instead of increased.

As we have just said, the responsibilities a veterinary surgeon incurs in the exercise of his profession are very numerous. Like all other persons who employ servants, if he have assistants or farriers, he is responsible for their acts while they are performing the duties which he has assigned them, and

for any damage which may arise through their ignorance or neglect. During the performance of necessary operations upon animals, accidents may occur which were altogether unexpected, unprovided for, and beyond control. In administering an anæsthetic the animal may suddenly perish. To perform many operations on animals it is necessary to employ restraint, and to place them in particular positions, in which they are exposed to various accidents, some of a serious and even fatal character, as fractures of limbs, vertebræ, ribs, pelvis, etc., or rupture of organs. Phlebotomy may lead to Phlebitis, Thrombosis and Embolism, or air may gain admission to the circulation—grave consequences, even death ensuing. The most trifling operations may, in fact, be followed by the most disastrous results, as when Tetanus arises from castration, amputating the tail, or even from removing a wart from the skin. The application of a blister, or even a mustard cataplasm, may in some cases, and from some peculiar irritability of the skin, produce unexpected and permanent blemish and disfigurement. During an operation—perhaps of the most trivial character—an important blood-vessel may be wounded, great hæmorrhage ensue, and the animal at the time or subsequently suffer seriously, or even perish in consequence.

In the treatment of diseases, responsibilities of a similar character are incurred, and unexpected and unfavourable results may ensue ; and as in the other cases, so in these : the owners of the animals may attribute the damage to, or loss of their property to the neglect or deficiency in skill of the veterinary attendant. Even in the administration of medicines serious results may follow : as when an animal is suffocated by the medicament entering the air-passages, or if solid becoming fixed in the œsophagus ; or it may even act as a poison. In these instances the owner may be of opinion that sufficient care has not been exercised or skill displayed, and he may therefore sue the veterinary surgeon for damages.

In dealing with infectious or contagious maladies of animals, the responsibility of the veterinary surgeon is great and pressing, and should receive his utmost care and consideration at all times ; though I fear that in this country the serious nature of this responsibility has not yet been fully appreciated or understood. There can be no doubt, I think, that he would incur blame did he, through neglect, ignorance or insufficient skill, permit the extension of a communicable disorder to man or beast ; and he might even be sued for the damage which resulted, provided his services were specially engaged in the matter. The same might be said with regard to diseased flesh as food, were veterinary surgeons inspectors of meat.

In the examination of horses as to soundness, the veterinary surgeon assumes serious responsibilities which do not always cease at the time of examination, but may continue for some time, if recent instances are to be taken as evidence.

The custom of having horses examined by an expert, previous to, during, or after the sale, is becoming much more general among both buyers and sellers, as it removes responsibility and risk from both, and places these on the shoulders of the expert ; and this fact, together with the greatly enhanced value of horses, lends an additional interest to the subject among veterinarians ; while the knowledge that they may be legally sued and cast in damages—even to the amount paid for the animal, if they give an erroneous opinion, renders it all the more necessary that the question should be carefully studied, and the service as carefully performed.

Into the question of what constitutes "unsoundness" in horses, I cannot here enter—very important though it is to us ; as there are conditions or alterations of parts or organs which, it would appear, the profession is not fully agreed as to whether they do or do not constitute unsoundness. But the veterinary surgeon, in assuming the responsibilities of an expert, and

giving his professional opinion as to the soundness or unsoundness of a horse, must always remember that upon his evidence the sale or purchase may entirely depend, and that the vendor or vendee—whichever employs him—in committing their interests to his judgment, and remunerating him for his services, have an undoubted claim upon him for redress, should his testimony, either through ignorance or negligence, prove to be erroneous. This is simple justice ; as without this redress the purchaser of the expert's services would have no guarantee of reliability, or that the services were faithfully performed ; while the knowledge of this responsibility for the correctness of his opinion, must serve to compel the veterinary surgeon to guard himself from the serious consequences of a careless or imperfect performance of his duty towards his employer.

In the examination of horses as to soundness, the legal definition of unsoundness appears sometimes to be unknown to, or to have escaped the memory of the expert, and I may, therefore, be pardoned if I allude to it here. Perhaps the best interpretation of the term is that given by Lord Ellenborough ; it is as follows :—"If at the time of sale the horse has any disease which either actually *does diminish* the natural usefulness of the animal, so as to make him less capable of work of any description, or which in its ordinary progress *will diminish* the natural usefulness of the animal, this is unsoundness ; or if the horse has, either from *disease* or *accident*, undergone any *alteration of structure* that either actually *does* at the time or in its ordinary effects *will* diminish the natural usefulness of the horse, such a horse is unsound."

It will be at once seen that great care and skill are necessary in searching for the existence of those morbid conditions which constitute unsoundness ; as if one or more of them are present to such a degree that they could be recognised or detected by any ordinary expert, and the animal is nevertheless pronounced sound, the veterinary surgeon who gives this opinion must bear the consequences.

And not only is this the case with regard to the examination for soundness, but it is also the same in reference to other matters in which the veterinary surgeon's opinion may be sought, and for which he has received, or expects to receive payment—as, for instance, the age of an animal, which may or may not be included in the soundness certificate. The animal is purchased on the evidence of the expert, who represents himself as competent to give an opinion ; and should this evidence be afterwards proved to be untrustworthy through want of skill or attention on the part of the veterinary surgeon, and the purchaser sustains loss thereby, then the surgeon is liable for the amount of that loss.

It is the same with operations and the treatment of disease ; for it is a well-recognised principle of law, that a person holding himself out to the world as a person of sufficient skill to do certain things, is liable for all damages resulting from his want of such skill as he has led those employing him to think he possesses. Thus, a man who holds himself out to the world as a surgeon, would be liable for all damages to a person who employs him, through neglect. For instance, to set a broken arm he would be responsible if, from neglect or lack of reasonable skill as a surgeon, he should so treat the broken limb that it would thereafter be crooked, or partly or wholly disabled, on account of such neglect or want of knowledge or sufficient skill.

The highest legal authorities have from time to time commented upon and enforced this principle, and it is alluded to in many law books. Thus, one writer states :

"The case of *locatio operis faciendi* is where work and labour, or care and pains, are to be bestowed on the thing delivered (or services rendered) for a pecuniary recompense ; *and the workman for hire must answer for ordi-*

nary neglect of the goods (*i.e.*, entrusted to the workman) *and apply a degree of skill equal to his undertaking. Every man is presumed to possess the ordinary skill requisite to the due exercise of the art or trade which he assumes. . . . . If he performs the work unskilfully he becomes responsible.*" *

And another writes : "Where skill, as well as care, is required in performing the undertaking, then, if the party purports to have skill in the business, and he undertakes for hire, he is bound, not only to ordinary care and diligence in securing and preserving the thing, but also to the exercise of due and ordinary skill in the employment of his art or business about it ; or, in other words, he undertakes to perform it in a workmanlike manner. In cases of this sort, he must be understood to have engaged to use a degree of diligence and attention and skill adequate to the due performance of his undertaking. And if he has not the proper skill, or if, having it, he omits to use it, or if he omits, in other respects, the proper degree of diligence and attention required for the work, he will be responsible for the damages sustained thereby by his employer. It is the party's own fault if he undertakes without having sufficient skill, or if he employs less than the occasion requires. And it has been well observed that, where a person is employed in a work of skill, the employer buys both his labour and his judgment. He ought not to undertake the work if he cannot succeed ; and he should know whether he can or not. Thus, if a farrier undertakes the cure of a lame or diseased horse, he is bound to apply a reasonable degree of skill to the cure ; and if, through his ignorance or bad management the horse dies, he will be liable for the loss. So, if a ship carpenter undertakes to build a ship, he engages for the exercise of reasonable skill, as well as proper care, in building it ; and he will be liable for any loss or injury sustained by his employer by his negligence or want of skill. . . . . Of course this doctrine is subject to the exception that the undertaker is permitted to act on his own judgment ; for, if his employer chooses to supersede the judgment of the undertaker, and requires his own to be followed, he must not only bear the loss, but pay the full compensation. . . . . The degree of skill and diligence which are required rises also in proportion to the value, the delicacy, and the difficulty of the operation. . . . . But in all these cases where skill is required, it is to be understood that it means ordinary skill in the particular business or employment which the person undertakes, or in which he is engaged. For he is not presumed to engage in extraordinary skill which may belong to a few men only in his business or employment, or for extraordinary personal endowments or acquirements. Reasonable skill constitutes the measure of the engagement of the workman in regard to the thing undertaken. . . . . But even where the particular business or employment requires skill, if the workman is known not to possess it, or he does not exercise the particular art or employment to which it belongs, and he makes no pretence of skill in it, then if the owner, with full notice, trusts him with the undertaking, the workman is bound only for a reasonable exercise of the skill which he possesses, or of the judgment which he can employ ; and if any loss ensues from his want of due skill, he is not chargeable. Thus, to put the case borrowed from Mahommedan law, if a person will knowingly employ a common mat-maker to weave or embroider a fine carpet, he must impute the bad workmanship to his own folly. So, if a man who has a disorder in his eyes should employ a farrier to cure the disease, and he should lose his sight through using the remedies prescribed in such cases for horses, he would certainly have no legal ground of complaint." †

* Kent's Commentaries, iii. 588.

† Story. On Bailments. Sections 431-435.

Such are the reasonable and legal views regarding responsibility, so far as the practice of an art is concerned, and these views are equally applicable to the practice of our profession.

If in any, or all cases, the veterinary surgeon can conclusively show that he has exercised reasonable and due care and skill, that he has conformed to well-established rules and principles in the performance of his professional duties, that he has acted comformably to experience and the teachings of science, that he has neither been negligent nor ignorant, in fact, in the observance of the functions which his position as a member of the Royal College of Veterinary Surgeons has imposed upon him ; then he should be held blameless for anything that may occur, and which could not be foreseen or successfully guarded against. But if, on the contrary, he accomplishes the services required of him—and for the performance of which he has engaged himself—in a careless or negligent manner, or acted unreasonably, unskilfully, and in disregard of the generally recognised rules and principles founded upon experience and science, then he must be held responsible for evil results or losses thereby incurred.

But who is to prove this negligence or ignorance of the veterinary practitioner? Not the general public certainly, nor yet the practitioners of human medicine or surgery, as they cannot be considered sufficiently acquainted with such a speciality as the veterinarian's profession to give a correct opinion on matters which they are not acknowledged to have studied. It is evident, therefore, that on professional questions, and especially in deciding as to the amount of professional responsibility in any given case, the opinion of members of the veterinary profession must be sought. And this brings me to the consideration of the second portion of my paper—the responsibility of veterinary surgeons to each other, especially in the matter of jurisprudence.

In the daily conduct of business, and in the stir and strife of competition, there are golden rules to be observed, which are, it is to be feared, only too often forgotten or violated.

The responsibilities of veterinary surgeons towards each other are certainly as serious and as worthy of recognition as those they incur in dealing with the public, though they may not entail any pecuniary penalty for non-observance, as with the latter. When acting for or against any professional brother it is our moral, our sacred duty, to do him professional justice ; to do unto him as we would that he should do unto us. If we must compete with him let us do so openly and honourably, not seeking to raise ourselves by lowering him, or enriching ourselves at his expense. If we differ from him in opinion, before we deride or condemn him, let us assure ourselves that we are on the right side, and then let our derision or condemnation be the opposite of virulent or cruel. The veterinary surgeon should be a gentleman in manner and feeling, not only towards his clients and the general public, but even more so towards his colleagues. If medical etiquette were strictly carried out among veterinary surgeons it would prove one of the greatest bonds to bind them together and make them work happily for their own and the public welfare ; for it is frequently from a misunderstanding of etiquette that we so often find one man falling out with another. True, there are no distinct rules laid down for the observance of practitioners in this respect ; but there is the unwritten code of honourable conduct, which is deeply imprinted in the mind and heart of every good man, and which is never forgotten by those who seek to live on terms of friendship, and to do their duty to their fellow-men, and particularly those who are bound to them by professional ties. "Live and let live" is a motto which should always be borne in mind. If veterinary surgeons will only remember their responsibilities to each other, and act as becomes gentlemen, taking care that they do that

which is right, honest and straightforward in the business of life, conducting themselves with propriety, and, while seeking to advance their own interests without knowingly injuring those of others, advancing also the science to which they are indebted for so much, success and the respect of their co-citizens must surely be theirs.

I have said that to establish a charge of professional ignorance or neglect against a practitioner veterinary evidence is necessary ; and it is here that we have so often to note an absence of that sense of responsibility towards his colleague which should form a prominent feature in the conduct of the veterinary surgeon. Medical evidence in jurisprudence is only too frequently shown to be the weak point in medicine, and indeed furnishes more proof of the unreliability of scientific evidence and scientific knowledge that can be found in all the other sciences. "When doctors differ, who shall agree?" has passed into a legal proverb, as the differences among doctors form a standing joke in the law courts ; but in veterinary medicine it perhaps finds its best illustration, as our jurisprudence records abundantly testify. Physicians and surgeons do differ among themselves oftentimes, on obscure medical points in legal questions, and generally where their own general professional interests are not involved ; but it must be confessed, that whether the points in dispute be or be not obscure, veterinary surgeons far outstrip the sister profession in diversity of opinion and contradictory evidence, without any regard for professional *esprit* or reputation, and only too often with reference to matters about which there should exist no dissidence whatever.

Why this unfortunate state of affairs should exist is, to me, incomprehensible, and I am puzzled to know to what justly to ascribe it. It would appear that there is scarcely a professional matter—whether it be related to the soundness or age of animals, the presence or the treatment of disease, the modes of performing or the results of operations, or other points—upon which agreement can exist, and there seems to be no difficulty in obtaining as much negative as affirmative evidence among veterinary surgeons, on almost every professional subject which may be brought into our law courts. What wonder, then, if judges and juries are puzzled and amazed at the disagreement existing among us with regard to matters which, if there is anything at all definite or substantial in veterinary medicine, should admit of no dispute? And need we be astonished that sometimes—indeed, only too frequently—an unjust verdict is given by a jury which has been baffled and confused by the discrepant professional evidence, and decides the matter which they do not understand, only upon some trivial circumstance that should have no bearing whatever upon the case.

To remedy such a disreputable state of affairs, it is essential that the cause or causes be ascertained ; and though I lay myself open to correction, yet I venture to ascribe it, in the first place, to defective scientific or practical knowledge on one side or the other ; in the second place, to the absence of a code of ethics for veterinary surgeons in this country, in which its members should find rules for regulating their conduct towards each other while pursuing their professional avocations ; and thirdly, to feelings of jealousy or a desire for notoriety.

Only too often have we observed a divergence of opinion among veterinary surgeons when in the witness-box, on matters which should admit of no discussion were all the witnesses possessed of ordinary scientific and practical knowledge, animated with a sense of responsibility for the reputation of their profession, and moved with the desire to act honourably and consistently towards their colleagues. And how can we account for the fact that in the law trials which are continually cropping up all over the country, we find veterinary surgeons, and even veterinary professors, arrayed against each other, and pitting their opinions in opposition—swearing hard and strong

that black is white and white is black, to the great discredit at least of their calling, except on the plea of imperfect knowledge on one side or the other, mutual jealousy and ill-will, or the thirst for notoriety? If to-morrow a member of the profession was to be sued for giving an erroneous opinion with regard to the soundness or age of a horse, for *malpraxis* in the conduct of an operation or treatment of disease, or some other matter in which he might be deemed responsible for damage or loss, it can scarcely be doubted that one or more veterinary surgeons or professors would be found to prove him guilty, while probably an equal number would come forward to certify to his innocence. The presence of a professor on one side or the other, will in all likelihood, decide the question, and the unfortunate defendant may be cast in damages, even though he may have been one of the professor's students, and the subject in dispute one which should have been, but never was, referred to during the school curriculum. Whether on the right or the wrong side, the history of veterinary jurisprudence shows that the professorial title will generally outweigh all other considerations with judge and jury, who cannot fairly estimate its value.

When such a state of affairs exists, we need not be surprised that the responsibility of the practitioner is immensely increased, and his position oftentimes most hazardous. Who can be assured of his safety, practice his profession as earnestly, skilfully and honestly as he may, when he knows that almost everything he does in word or in deed with reference to his business may be pronounced wrong by some of his colleagues, and that he may be unjustly cast in damages and ruined in reputation through their evidence.

Cases in which veterinary surgeons are sued for wrong opinions or *malpraxis* are becoming alarmingly frequent, and their increasing frequency can only be chiefly ascribed to the apparent fact, that the pursuer can always find members of the profession to appear in support of his claim. Such a state of things certainly does not rule in human medicine. Surgeons and physicians have generally too much regard for their calling, know the value of professional reputation too well, and thoroughly understand the grave difficulties which attend practice for them to venture upon readily exhibiting themselves and their knowledge in similar cases. Our educational *status*, general and professional, is inferior to theirs ; the practice of our calling is much more difficult ; our knowledge of pathological processes in animals is much less profound than theirs ; and we cannot avail ourselves of many of those aids to investigation and diagnosis which are at their disposal. All this, it might be inferred, should tend to make us more tolerant of real or imputed error, and dispose our mind favourably towards a colleague who may be blamed, but whose error, if it really exists, cannot fairly be ascribed to wilful negligence or woeful ignorance. It is well that gross neglect or want of ordinary skill should be severely reprehended by our profession, and that its good name—professional and social—should be most jealously preserved and enhanced by every means in our power ; but it is also as necessary that we should be just, tolerant and honest towards each other, and make all due allowances for what might be deemed errors of omission or commission, so long as these are not due to carelessness, neglect, or grave want of skill.

On the latter point it must be remembered that the graduate of the Royal College of Veterinary Surgeons is supposed to possess ordinary skill to practise his profession—his diploma, in fact, is a guarantee to the public that he is skilled in veterinary medicine ; and therefore when we impugn any colleague of want of sufficient skill, we are bringing a serious charge against the entire body of the profession, whose position in medicine and surgery rests upon the merits of its college.

I have thus far endeavoured to trace the responsibilities of veterinary surgeons with regard to the public and themselves, and without venturing to

adduce illustrative details, each of which would require a separate essay and special discussions. The public responsibilities will always exist, and as the profession gains more elevated ground will probably increase in number and magnitude; those existing between veterinary surgeons will also continue, but their importance will be more fully recognised and acknowledged with the advancement of general and professional education, and the cultivation of those higher sentiments which are not satisfied with the mere accumulation of pounds, shillings, and pence. Until that time arrives, it is to be feared that we shall still have to witness discreditable discrepancy in evidence among veterinary surgeons; and that we shall have to note the fact that the practitioner, however conscientiously he shall have performed his duty, will still be exposed to legal measures brought to bear upon him by a dissatisfied client whose chief, if not sole evidence, is that of members of the profession. Under these circumstances when loss of money and, what is far worse, loss of reputation, are always impending—it is necessary for his own safety that the practitioner should adopt means of defence against what are, in the majority of instances, most unjust actions at law. Single-handed, there are indeed few among them who can hope to contend sucessfully against a wealthy pursuer, whose means may enable him to muster an overwhelming array of witnesses to crush the unlucky defendant by mere weight—not worth —of evidence. But combined, there may be, and indeed, there is a means of successful defence, for this bulwark against injustice already exists; it has been founded and reared in this great city of the north, whose liberality and enterprise are no more famous than its integrity and sense of justice. Manchester claims the honour of being the birthplace and home of the Mutual Defence Society; the lamented Mr. Friend, of Liverpool, was, I believe, its parent, while Lancashire contains many of its most trustworthy and enthusiastic supporters. I can say nothing too high or too strong in favour of this Society; it has its *raison d'être* in the unfortunate position of affairs which I have attempted to describe, and of its utility, of the urgent need there is for its existence and maintenance, there cannot remain a doubt in the mind of any one who is not absolutely prejudiced against every movement made by the profession for its elevation and protection. Defence, not offence or defiance, is, I take it, the motto of the Society, and so long as there exists professional *esprit*—professional honour and integrity—we may be sure that its action will be limited to the protection of its members from injustice; and while it will not seek to absolve them from their responsibilities towards the public or each other, but will rather move itself to make those responsibilities more apparent and pressing, it will never degrade and destroy itself by shielding the unworthy from the consequences of unprofessional conduct or neglect of professional duties. The members of such a society, in their deliberations on jurisprudence cases brought before them for consideration, furnish the best means for arriving at a decision as to the culpability or innocence of those who are threatened with legal proceedings for alleged professional *malpraxis* or neglect; and if this court, receiving the support of the profession, will carefully and honestly exercise its functions, we shall be spared very many of those painful revelations in the witness-box, which place professional morality and skill at such a low standard, and do us, as a body, irreparable injury. The profession has no need to shirk its own special responsibilities, but it must protect itself against the imposition upon it of responsibilities which it should not incur and its members against injustice and undeserved loss or ruin. In no other way can it do so, but by the aid of a society such as that you now possess; and seeing its objects and the urgent necessity there is for its operation, it is indeed surprising that it does not receive the countenance and support of every practitioner in these kingdoms. It well merits the hearty good wishes and aid of all who

are ever likely to be in doubt, difficulty or distress—and from these none of us are free. The worth of a profession after all, in the long run, is the worth of the individuals composing it; and if these individuals are animated by the proper spirit, their union for the protection or advancement of their individual or common interests is the best evidence of their professional integrity and worth.

With regard to the responsibilities of the veterinary surgeon towards his patients, I am sure I need not say much. For the reason that these are destitute of speech and cannot make their complaints and grievances known; that the veterinary surgeon has it in his power to protect them largely from cruel treatment, assuage their pains and soothe their maladies, and render their life more enjoyable and prolonged, so do his responsibilities towards them become magnified. It is his most sacred duty, as it is his greatest privilege, to acknowledge these responsibilities, and to do all he possibly can to mitigate the evils which civilization and only too frequently maltreatment have brought upon them. Kindness to animals is a fine trait in the character of any man; in the veterinary surgeon it becomes a paramount duty, and his responsibilities in this respect should be ever before him. This kindness makes man more God-like, and must exist where goodness prevails.

"He prayeth best, who loveth best
All things, both great and small;
For the dear God who loveth us,
He made and loveth all."

THE DANGER OF CONSUMING MILK FROM ANTHRAX-STRICKEN ANIMALS.

In the Veterinary Journal for May, we gave the interesting result of an experiment by a great authority on Anthrax, Professor Feser, of the Munich Veterinary School, showing that the placenta offers an insurmountable obstacle to the transmission of that disease from an infected mother to the fœtus, though the blood of the parent may swarm with *Bacilli*, and prove deadly when inoculated into other animals, or perhaps even to the same fœtus after it has been born. Feser's experiments, some of which we shall allude to in detail on a future occasion, are entirely in favour of the opinion entertained by Pasteur, that Anthracic affections are entirely due to specific bacteria which are really the sole agents or bearers of the contagiferous principle, a fact which has induced him to designate Anthrax the "Bacteridic Disease." Some authorities have disputed Pasteur's conclusions, and the most formidable of these opponents has been Professor Cohn, of the Alfort Veterinary School, who persistently insists that the virulence of Anthrax is due to certain alterations in the blood, rather than to the peculiar microscopical organisms found in it.

The more recent experiments of Feser are given in the *Wochenschrift für Thierheilkunde und Viehzucht* for March, 1879 ("Ueber die Milch milzbrandkranken Thiere"), and are as follows:—

First Experiment.—A ewe of the Tyrol breed dropped, on November 1, 1878, a healthy lamb, which she suckled. On the 10th of the same month, at 9.40 a.m., 1-10th of a cubic centimetre of Anthrax blood from a rabbit was injected into the ewe subcutaneously. During the first day nothing abnormal was noticed, and the lamb obtained an abundance of milk from her. On the second day there was evidence of infection by the increase of temperature which, for four days previously, was between 39.5° and 40.2° Cent., but was now 41.5°; though the animal ate heartily, the pulse and respiration were

normal, and the lamb appeared to be quite satisfied with its allowance of milk—the udder being full and the milk itself healthy in appearance. At the beginning of the third day the temperature was 41.7°, there was no appetite, and the lamb went to the teat oftener and pulled at it more vigorously than usual. During the second half of the third day the ewe died from Milzbrand (Anthrax), and Feser found the lamb sucking at the teat of its dead mother. The autopsy revealed the lesions of undoubted Anthrax. In the blood and all the tissues were great numbers of the *Bacillus anthracis*, and in the milk they were also found, though in fewer number. The lamb was fed on cow's milk for three weeks and remained healthy.

Second Experiment.—A cross-bred Merino ewe, which had lambed on November 25th, 1878, received by subcutaneous injection on the right side of the chest, at 10.33 a.m., on December 11, a mixture of half a gramme of fresh Anthrax blood from a rabbit, and the same quantity of 40 per cent. solution of carbolic acid. On the 12th, the ewe was quite well, and gave the lamb plenty of milk. At 8 a.m., the temperature was 40.3°, at midday, 30.4°, and at 5 p.m., 40.8°. On the 13th, at 8 a.m., the pulse was 90, and the respirations 32 per minute, but the temperature was 42.7° Cent. The creature was dull and feeble, and had no appetite, and the lamb evidently did not receive sufficient milk. At 9 and 9.30 a.m. the ewe received two grammes carbolic acid in one per cent. water solution ; so that within half an hour she had got four grammes of the acid. During the treatment there was great weakness in the hind-quarters, trembling of the whole body, with greatly hurried respiration. Death took place at 10 a.m. On examination of the body there were all the characteristic indications of the disease in the blood, spleen, and particularly at the seat of injection, with numberless Anthrax rods everywhere. A rabbit was inoculated with some of the spleen pulp, and died in two days with all the signs of the malady. But the lamb which had sucked the ewe until her death, and was fed on cow's milk for fourteen days subsequently, remained healthy.

Third Experiment.—A quarter of an hour before death, Feser readily obtained in a short time from the udder of each of the above-mentioned ewes, twenty cubic centimetres of milk. The orifice of the teat was perfectly clean, and every precaution was taken that nothing from the affected animals should get into the fluid. The milk appeared to be quite healthy, and physically, as well as chemically, it did not differ from normal milk. But a microscopical examination revealed the presence of a few Anthrax *Bacilli*, disseminated in company with very large and irregular fat-globules.

With this milk two infection experiments were made on two sheep. These received at 2 p.m. on December 13th, one centigramme of milk by subcutaneous injection. One sheep died on the night of the 15th-16th, and the other on the 16th at mid-day, having received doses of carbolic acid previous to death. The autopsy of both sheep revealed extraordinary jelly-like swelling at the seat of inoculation, sanguineous transudations in all the cavities of the body, severe lung œdema, the spleen greatly swollen and softened, the urine sanguinolent, and in the blood and all the fluids and tissues the presence of masses of the characteristic *Bacilli*. It was therefore evident that both of these experimental animals had succumbed to Anthrax infection, through injection of the milk which the lamb had consumed with impunity.

From the foregoing observations, Feser draws the following conclusions :—

(*a*) The milk from an animal affected with Anthrax is, even when it appears perfectly normal, in the highest degree virulent, and may of itself produce the disease in other animals when introduced into their tissues by natural inoculation—as through a wound or injury.

(*b*) The ingestion of uncooked milk from Anthrax-stricken animals can

injure the young creatures which receive, when it chances to find access by an abrasion or wound ; otherwise its virulence is inert.

These facts are of great value from a sanitary point of view, as they show that there is every reason to prohibit the use of such milk, from its containing the Anthrax contagium ; and when it so happens that it has been consumed without injury, this is merely because it did not obtain direct access through a suitable channel.

THE TRANSMISSION OF HUMAN SYPHILIS TO ANIMALS.

THAT human Syphilis can be transmitted to animals by inoculation has been generally denied, though two or three experimental facts are on record which would go some way to prove this transmission possible. Auzias Turenne, for instance, asserted that he had successfully inoculated a cat, and other experimentalists have noticed some peculiar effects following the inoculation of monkeys and other creatures ; but later experiments of Horand and Peuch negatived the idea that this malady could be transmitted to domestic animals.

We learn from a recent issue of the *Allgemeine Wiener Med. Zeitung*, that on the occasion of the fifty-first meeting of German naturalists, at Cassel, Professor Klebs read a paper on researches which he had pursued for three years with regard to the inoculability of Syphilis to animals, and the nature of the contagium of that malady. His observations more particularly had reference to the pathological phenomena noted in the monkeys upon which he had tried inoculation, and, from the details he offered, it would appear that these phenomena are identical with those usually observed in mankind ; so that there can no longer be any question as to the transmissibility of the disease to the Simiidæ at least.

In his investigations into the nature of the Syphilis contagium, as well as in his inoculation experiments, he only had recourse to matter obtained from intact Hunterian chancres, while he obtained from the living subject the portions of diseased tissue which he examined without delay. In these examinations he found that in addition to the more or less numerous round cells, the fluid in this tissue always contained a great number of rod-shaped vibrionæ, from two to five-thousandths of a millimetre in length, and having a slow but apparently spontaneous motion. These bodies Klebs cultivated in solution of isinglass, and after a few days a kind of scum formed on the fluid ; this was composed of microscopic fungi which were developed in the cultivation solution, and which had the appearance of certain concentric circles around the fragment of morbid tissue which had been deposited therein. The rod-shaped bodies were at first endowed with an active motion, but they soon became grouped and interlaced in such a way as to constitute an intricate network of a oval shape—a peculiarity which Klebs had never observed with any other similar bodies when cultivated. The same results were obtained with matter obtained from the body of a monkey yet warm, and which had been suffering from Syphilitic infection through inoculation.

From these concordant facts, Klebs considered himself authorised in concluding that the microscopical fungi he had been studying are the real elements or active agents in the production of Syphilis, and he therefore proposes to name them *Helicomonads*.

Proceedings of Veterinary Medical Societies, etc

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL,

HELD OCTOBER 2ND, 1879.

Present:—The President; Professors Pritchard and Walley; Messrs. Batt, Blakeway, Cartledge, Cartwright, Cuthbert, Dray, Fleming, Freeman, Gowing, Greaves, Harpley, Moon, Morgan, Reynolds, Robertson, Taylor, Whittle, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the previous meeting were read and confirmed.

Letters were read from Mr. James Collins, Mr. Anderton, Professor McCall, and Mr. George Williams, regretting their inability to be present at the meeting.

From Mr. E. C. Dray, the Treasurer of the College, withdrawing his resignation of that office.

From Mr. Loch, relative to the supplemental charter, asking for a cheque for £150 for expenses incurred at the Home Office.

The SECRETARY stated that he was directed by Mr. Harpley to present to the College a photograph of the Veterinary Congress in Hamburg, held in July, 1863, containing a portrait of their lamented friend, the late William Field.

On the motion of Mr. DRAY, seconded by Mr. REYNOLDS, a vote of thanks was given to Mr. Harpley for his presentation.

Letters were read from Miss Tillett, tendering her thanks to the President and Council for their letter of condolence and sympathy on the loss of her uncle, the late Professor Varnell.

From Mr. Charles Marking, of Topperfield, Essex.

From the Secretary of the Royal Veterinary College, wishing to be informed whether men under the two-years' system would be allowed to come up for examination at Christmas, as he understood that some further extension had been granted. Also the reply, stating that the Council had decided that the examination under the two-years' system would cease in January next.

From W. T. Simmonds, M.D., United States, relative to his diploma from the Havard Medical School, asking whether one year's course of study would be sufficient to entitle him to receive the diploma of the Royal College of Veterinary Surgeons, in the event of his being competent to pass the examination.

The Secretary was directed to reply that a two-years' course of study was necessary, in accordance with Bye-law 47.

A letter was read from Mr. William Stuart Low, medical student, Burntisland, Edinburgh, stating that he was a rejected candidate in April, 1876, but obtained the Highland and Agricultural Society's certificate, and asking whether the diploma of the College would be granted to him without additional expense.

The Secretary was instructed to reply that the diploma would be granted on the payment of the regulation fee of five guineas.

Letters from Albert Barr Medd, of Holbeach; F. Payne, of Devizes; and George Rees, Llanboidy, who, having been rejected at the July examinations, and referred to their studies for twelve months, now applied to know whether they could come up for their examinations at Christmas next.

Reports of the Examinations.

The reports of the July examinations held in London and Edinburgh were read.

Mr. REYNOLDS moved that the suggestion of the Court of Examiners be adopted, namely, that the rejected candidates should be referred to their studies for twelve months.

Mr. TAYLOR seconded the motion.

The PRESIDENT thought they could not possibly carry out the suggestion of the Examiners, because the old system expired in January next, and if that suggestion were carried out these men were thrown out for ever; they could never present themselves under the old rule.

Mr. FLEMING asked whether the Examiners were aware of that fact, because it would be a very great hardship. If they were acting in ignorance as to the existence of the rule regarding the termination of the examination in January, they might be appealed to to alter their decision.

Mr. ROBERTSON, as one of the members of the Board of Examiners, said that point was not taken into consideration; he was therefore willing to propose that these students be allowed to come up in January next.

Professor WALLEY seconded the amendment, which was supported by Mr. Harpley.

Mr. REYNOLDS having withdrawn his motion, the amendment as moved by Mr. Robertson was agreed to.

On the motion of Mr. FLEMING, seconded by Mr. GOWING, the Secretary was directed to inform the Chairman of the Board of Examiners as to the facts of the case.

The SECRETARY read the report received from the Examiners of the Royal College of Veterinary Surgeons, drawing the attention of the President of the Council to the fact that a discrepancy existed between the notation in the record of the Pass Examination and that reported in the proceedings of the Council dated 5th March, 1879.

On the motion of Mr. HARPLEY, seconded by Mr. DRAY, the matter was referred to the Publication Committee.

Letters were read from Mr. Hobson and Mr. Sharpe, inquiring whether Mr. Francis Baxter, jun., charged in the Leicester Police Court with larceny, was a member of the Royal College; and also relative to Joseph Wood, who stated that he was a member of the College.

The SECRETARY stated that neither of those persons were members, and a certificate to that effect had been forwarded.

Eighteen candidates, holding the Highland and Agricultural Society's certificate, had made application for the diploma, and fees amounting to £28 7s. had been paid. Amongst other applicants was a Mr. Evan Evans, who stated that he held the Highland and Agricultural Society's certificate, but as his name was not on the register the Secretary wrote to Mr. Menzies, who replied that the man's name was not on the list. Mr. Evans was therefore informed that the diploma was only for those who held the certificate of the Highland and Agricultural Society.

Mr. FLEMING urged the importance of taking every precaution, so that gentlemen applying should be thoroughly identified before receiving the diploma.

Mr. ROBERTSON said there was no difficulty in identifying the man if he was asked to send his certificate to the Secretary. He thought means should be taken to inform those holding the Highland and Agricultural Society's certificate that they could now obtain the diploma. It could be done by advertisement.

Professor WALLEY proposed that circulars should be sent to those

gentlemen, informing them that they could obtain a diploma on application, and stating the scale of fees.

Mr. WHITTLE seconded the proposition.

Mr. FLEMING said for their own sakes the Royal College should be quite sure that no blunder was made in issuing the diploma, and they should themselves take the duty of discovering if the men were really eligible, and of notifying to the profession that the diploma would be issued.

The PRESIDENT proposed that the names of all gentlemen applying for the diploma should be sent to Professor Walley, to Professor McCall, and to himself to be revised, because there was still a little loophole open for some degree of fraud. A man might be dead, or his son or brother might get hold of the circular and apply for the diploma. He thought the list of names should be revised by the authorities in Scotland.

Professor Walley's motion was then agreed to, with the addition of the suggestion made by the President.

A suggestion made by Mr. Fleming, that the names of those gentlemen applying for the diploma should be submitted to the Council before it was granted, was agreed to.

The Registrar's report of deaths was read. The report of the Finance Committee was read. The vouchers and receipts for payments during the preceding quarter were examined and found correct. The present liabilities amounted to £172 15s. 11d., which included the parliamentary agents' and the builders' expenses, which the Committee recommended should be discharged; this would leave a balance at the bankers, £260 5s. 8d.

Mr. CARTLEDGE moved, and Mr. ROBERTSON seconded, the reception of the report, which was agreed to.

On the motion of Mr. Fleming the report was adopted, and cheques were ordered to be drawn for payment of current accounts.

The report of the House Committee was read.

Mr. HARPLEY said he had been asked by Sir Frederick Fitzwygram to bring before the notice of the Council the fact that a freehold property, No. 16, Fitzroy Square, was to be sold. Some of the Council had seen it and thought it a house that would suit the College very well for new premises.

Mr. FLEMING moved, "That the matter be left to the House Committee, to visit the building, and to prepare a report upon it to be laid before the Council."

Mr. ROBERTSON seconded the resolution, which was agreed to.

Resignation of the Secretary.

The PRESIDENT said he had a letter to read from the Secretary, announcing his intended resignation. [Letter read.] He laid that letter before the Council with very great regret, and he was sure that no observations of his own were needed to convey the assurance to Mr. Coates that the Council received his resignation with very great sorrow.

Mr. DRAY said he could quite endorse the observations made by the President. He was one of those who nearly eighteen years ago had had the pleasure of voting for Mr. Coates as Secretary to the Council, and he regretted very much that his state of health had caused his resignation. He was a man of the highest integrity and moral worth, and in his unremitting attention to his duty he could not be surpassed. The Council would have very great difficulty in replacing him, and he (Mr. Dray) regretted the cause for his resignation.

Mr. HARPLEY said he scarcely knew what to say on the subject. It had taken him by surprise, as it had, no doubt, most of the Council. He thought that, as Mr. Coates had filled the position of Secretary of the College for

eighteen years, their best plan would be to receive the letter and defer any discussion until the next meeting, which would give them some little time to think over the matter. At the present moment he was not in a position to say anything more about it, and would therefore make that proposal.

Mr. TAYLOR seconded the proposition.

Mr. GOWING said he fully agreed with the observations that had been made, but he suggested whether if some assistance was furnished to Mr. Coates he might be induced to remain in the position in which he (Mr. Gowing) was only too happy to see him.

The PRESIDENT said that would be discussed at the next meeting.

The resolution was then agreed to.

The PRESIDENT read a requisition signed by twenty-two members of the College requesting the Council to call a special meeting to consider the system of competition maintained at the Royal Veterinary College, St. Pancras, which, in the opinion of those who signed the requisition, was injurious to the profession generally.

Mr. GREAVES said, as one of those who had signed the requisition, he had been induced to attend the meeting, and the advice he gave to the members was, that this being a matter between the London practitioners and the Royal Veterinary College, he thought the more straightforward course would be to appoint a deputation and request an interview with the Governors in order to lay their grievances before them. He was overruled by those present, who considered it the more legitimate course to apply to the Council as being the head of the veterinary profession ; and in the result it was decided to ask the Council to call a general meeting of the whole profession in order to discuss the difficulty.

Mr. FLEMING said the petition appeared to be in proper form, and was quite in accordance with the bye-law. The Council was not in a position to discuss the matter ; the only thing they could do was to accede to the petition, which was perfectly legal.

The Secretary was directed to call the meeting for Wednesday, October 15th, by advertisement, in the same manner as was provided in the Charter in the case of the annual meeting, the object of the meeting being specified in the advertisement.

Mr. FLEMING gave notice of motion, that no gentleman be allowed to receive his diploma under the age of twenty-one years, and that on presenting himself for his final examination he should produce a certificate of age.

Professor WALLEY gave notice that at the next Council meeting he would bring forward a motion to discuss the advisability of placing the second summer session between the first and second examinations, instead of, as at present, between the second and third.

Also that, at the next meeting, he would call attention to the bye-laws referring to the admission of medical men and gentlemen holding the diploma of any veterinary examining body recognised by the Council. An anomaly seemed to have crept in which was never intended, for by that bye-law a medical man was exempt from the first examination, whereas a veterinary surgeon must pass the first and second examinations if he wished to obtain the diploma.

Special Meeting.

Mr. ROBERTSON proposed the adoption of Mr. Peter Taylor's alteration of Bye-law 37, which was carried at the last meeting.

Mr. WHITTLE seconded the resolution.

Professor WALLEY said he believed the rescinding of the bye-law was a step in the wrong direction, because it would throw into the College a number of men who did not care how long they remained there, and who would

make other men as bad as themselves. He would move, as an amendment that the bye-law be rescinded, but with this proviso: That if the student could not bring to the Board of Examiners and the Secretary of the Royal College of Veterinary Surgeons a certificate from the principal of his college that he had studied during the interval, he should not be allowed to go up. In other words, if a student had been idly wasting his time he should not be allowed to go up more than three times, because the absolute removal of the bye-law would be the means of such men hanging about the colleges.

Mr. GOWING: Do not you certify that he is eligible to go up?

Professor WALLEY said no; they only certified that he had attended a course of lectures.

The amendment was not seconded, and the motion was put and agreed to.

The PRESIDENT withdrew his resolution with reference to Bye-law 46.

Mr. GOWING proposed the following alteration of Bye-law 36:—"That should he not pass his third examination, then shall he pay, should he again wise to present himself, a fee of six guineas at each subsequent re-examination, and seven days prior thereto."

The PRESIDENT pointed out that it was stipulated in the charter that the examination fees were not to exceed ten guineas. They already received three 3 guineas and one guinea, making the ten guineas, and that could not be increased.

Mr. FLEMING suggested that further advice should be taken, and at the request of Mr. Gowing the matter was adjourned till the next meeting.

Mr. FLEMING then proposed the motion of which he had given notice:—"That in case any student, after having attended the prescribed course, is prevented by any cause, the fault not being his own, from presenting himself for the first or second examination, he shall, after having passed the examination, be allowed to present hmsielf for the one immediately following, by studying one term less than he would by Bye-laws 31 and 32, provided the full number of terms shall have been complied with." At present unless a certain number of students come up for examination they are not examined, but must stand over, which was a hardship. As the college had no desire to be unfair to students, there should be some provision made for their protection. He believed that the bye-law as he had proposed it would be entirely equitable to the students, and he was sure the Council would assent to it.

Professor WALLEY seconded the motion, which was agreed to.

The SECRETARY was directed to call a special meeting of the Council for the 14th inst., for the purpose of confirming the abolition of Bye-law 37.

(Adjourned.)

SPECIAL MEETING OF COUNCIL, HELD OCTOBER 14TH, 1879.

IT was moved by Mr. TAYLOR, and seconded by Mr. CARTWRIGHT, "That Mr. E. C. Dray take the chair."

Present.—Mr. Dray, Vice-president (took the chair); Messrs. J. W. Anderton, Cartwright, Collins, Greaves, Harpley, Morgan, Reynolds, Taylor, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The expunging of "Bye-law 37," notice of which had been givien by Mr. Taylor on April 10th, and which had been discussed and adopted at a special meeting of the Council on October 2nd, was now formally confirmed, signed, and sealed, in accordance with the provisions of the Charter.

A second special meeting was then convened.

The SECRETARY said, now that the expunging of the bye-law had been confirmed, he wished to ask whether the three students, two of whom had been rejected three times, might be allowed to come up for examination in January next, as the examinations under the old system would terminate in that month.

On the motion of Mr. MORGAN, the Secretary was instructed to inform the applicants that they could, if they wished, come up for examination in January next.

The SECRETARY had received two letters, one from Professor Vaughan in reference to Mr. Charles Parker Lyman, who holds the Highland and Agricultural Society's certificate, and who had remitted the sum of three guineas. This name was on the list. The other letter was from Mr. Gunn, received that day, who also held the Highland and Agricultural Society's certificate. He was also registered in the Highland Society's list of members. He wished to know whether these two gentlemen might be allowed to receive their diplomas.

The matter was allowed to remain in abeyance until the opinion of the three principals in Scotland was obtained, in conformity with the instructions given at the last meeting of the Council.

A form of circular, submitted by the Secretary, was, as amended, ordered to be sent to those gentlemen holding the Highland and Agricultural Society's veterinary certificate.

The next subject was to take into consideration the report of the Deputation Committee in reference to the purchase of premises for the Royal College of Veterinary Surgeons at No. 16, Fitzroy Square.

The SECRETARY read a letter from Messrs. Whyte, Collison, and Prichard which had been submitted to the last meeting of Council, and also the report of the Deputation Committee appointed by the Council to inspect the above-mentioned premises. It stated that they had inspected the premises, and that they were of opinion that they were most eligible and well suited for the purposes of the College, and they recommended the purchase of the same.

Mr. GREAVES, as one of the deputation, stated that they were very much pleased with the position of the premises and with their character, both internally and externally. They were anxious that the Council should become possessed of them, because in every sense of the word they were far more eligible than the premises they now occupied. He proposed that a surveyor should be at once called in to value the property, and if the surveyor's opinion was that it was worth the money, then it ought to be purchased.

Mr. MORGAN said that, as far as he and some friends saw of the property from the outside, it seemed a very eligible one. He should be glad to second Mr. Greaves's motion for the appointment of a surveyor; but the Council had scarcely power to order the purchase until the next meeting of Council.

Mr. HARPLEY said he had also inspected the premises, but he was doubtful whether there would be frontage enough. No doubt it was a comfortable house as a residence, and there was more space in which to stow away the property of the Council than there possibly could be found on the present premises; but he hoped the Council would fairly take into consideration all the difficulties before they came to any definite conclusion regarding its purchase. There was no doubt a very nice room which could be turned into a museum; but certainly the rooms were not so nicely arranged as to be in every respect available for the purposes of the College. There was a difficulty as to a lecture-room; and one of the objects in purchasing another house was that there should be a room where lectures, interesting to the profession, could be delivered.

Mr. COLLINS thought that in discussing this question, the sort of building

that was actually required for the College ought to be taken into consideration. The proposed house was, no doubt, larger than the present ; but was it in a better position than Red Lion Square? There was, he thought, a deficiency in the frontage. If the property were once purchased, and afterwards found to be unsuitable, he reminded the Council that it would be a burden upon them for the rest of their natural lives. He proposed that an advertisement should be inserted in the newspapers indicating the style of property required.

Mr. TAYLOR seconded the motion, remarking that it was absolutely necessary for the interests of the profession that whatever new premises were fixed upon they ought to have a good, bold frontage.

Mr. GREAVES'S motion for the appointment of a surveyor to inspect the premises and report thereon was then put and carried, as was also the motion of Mr. Collins recommending the insertion of an advertisement for suitable premises.

The House Committee were instructed to draw up an advertisement.

The names of Mr. Blakeway, Mr. Collins, Mr. Greaves, and Mr. Taylor were added to the House Committee, to whom the appointment of a suitable surveyor was relegated.

The SECRETARY was instructed to send an answer to Mr. Prichard to the effect that a surveyor had been appointed to inspect the property and to report to the Committee.

The Council then adjourned.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

MEETING IN NOTTINGHAM.

THE thirty-eighth meeting of the Midland Counties Veterinary Medical Association was held at the George Hotel, Nottingham, on September 17th. Professor Pritchard, Royal Veterinary College, President of the Association, occupied the chair ; and there were also present Messrs. Parker, Birmingham ; Perrins, Worcester ; Over, Rugby ; Blakeway, Stourbridge ; Taylor, jun., Nottingham ; Capt. Russell, Grantham ; Carless, Stafford ; Carless, Worcester ; Cox, Stoke-on-Trent ; Carless, Lincoln ; Hodgkinson, Hanley ; Bowles, Abergavenny ; F. J. and G. H. Pyatt, Nottingham ; Goodall, Melton-Mowbray ; Heap, Melton-Mowbray ; Tipper, Birmingham ; Martin, Chesterfield ; Weston, Eastwood ; Smith, Tunstall ; Noar, Ashbourne ; Hodgkinson, Uttoxeter ; Cox, Nottingham ; Taylor, Loughborough ; Taylor, Manchester ; Aitken, Loughborough ; Reynolds, Mansfield ; Rossell, Sandiacre, etc. Letters of apology were read from Professors Williams and M'Call, Messrs. Greaves, Manchester ; Steele, London ; Berry, Northampton ; Barling, Newnham ; Cartwright, Wolverhampton ; Chattell, Bromley, Kent ; Hill, Wolverhampton ; Cresswell, Bromsgrove ; Page, Banbury ; Stanley, Leamington ; Wolstenholme, Manchester ; Ball, London ; and Olver, Tamworth.

Professor PRITCHARD commenced the proceedings by giving a very interesting description of the new method of "firing." Since the circular had been sent out he found that the method was not so novel as he had anticipated. On the subject of the utility of firing he would not enter, but if useful he considered the apparatus he was about to introduce most desirable, and it should be generally employed. It consisted of a spirit-lamp connected by india-rubber tubing with two india-rubber balls, by which a stream of air was sent through the flame, greatly increasing its power. A hollow iron, with a hollow wire through its neck, was heated in the flame, and the current of air was then connected with a bottle containing benzoline, and the iron being

also connected, the spray was evaporated ; the spirit being passed up the iron produced combustion and kept up the heat. The benzoline should be of the commonest quality, and the bottle not nearly full, whilst the apparatus should be kept in a dry place, and care taken that the bottle was not turned upside down, as the benzoline might thus escape and corrode the metal and more especially the wire up the hollow tubing. The apparatus was small, and exceedingly portable. The work by this could be performed more readily and more artistically. The wounds would heal better, and less blemish would be observable. He had, in fact, seen cases of pyro-punct-notomy which had scarcely left any blemish.

Captain RUSSELL had used the apparatus for about five months, and endorsed the remarks of the President. He had the spirit-lamp, with the remainder of the apparatus, around his waist, thus having his hands more at liberty. He had modified the apparatus for firing for different purposes, and the whole cost was only £7 10s.

Mr. BLAKEWAY understood the apparatus to be named thermo-cautery. He had seen it used by medical men, and considered such an apparatus calculated to raise the veterinary surgeons in the estimation of their clients. He though one person should generate the spray whilst another used the firing instrument.

The Treatment of Sandcrack.

Professor PRITCHARD next addressed those assembled on the subject of mechanical support of the hoof, or what was generally considered necessary in the treatment of "sandcrack." He wished especially to speak of the principle enunciated by Mr. South, of London, which not only dealt with the bringing the hoof into a healthy state, but also a plan for supporting the hoof. The majority of practitioners had plans for this, but until the views of Mr. South were promulgated there had been various usages ; for instance, clinching was very generally used to prevent sandcrack, to hold the margins of the crack in apposition with each other. Mr. South adopted a plan which would clearly show that this was not absolutely necessary. He held that if the margins of the crack were to be kept in a perfect state of rest, it was not perfectly necessary that they should be in apposition to each other. Let him remind them that if a horse's hoof was sandcracked, and the animal suffered therefrom, every time it moved its foot the movement caused the crack to deepen. Mr. South said, and rightly too, that that movement would only cause an opening so far, and no farther ; and with that impression he had the idea, that if they could insert something in the shape of a wedge which would hold the margins of the crack, and so far, as the movement of the animal would bring about a spreading, it would have a more beneficial effect than any other mode of treatment ; and it also occurred to him that by this the horse might actually be kept at work. If that was so, it was a very great advantage. They had had hitherto to treat sandcrack in different ways, and they knew under the systems adopted that horses required considerable rest, even in treating them with plasters. There were certain complaints wherein, under a certain *regime* of treatment, a month's rest was necessary ; but Mr. South said that in his treatment the horse might go to work the next morning. Not only did he say this, but he (Professor Pritchard) had seen it done. Still Mr. South did not hold out that his plan would succeed in every case. There were some instances where, instead of proceeding direct down the hoof, the crack took a zig-zag course, in which, perhaps, the proposed treatment would not succeed so well ; but Mr. South asserted that in the majority of cases his plan of treatment was certain to be successful. The speaker having explained in detail the manner in which Mr. South proposed to prevent suffering from sandcrack, which was illustrated by models produced,

showing that it was the simple insertion of a wooden wedge, the exact counterpart in shape of the fissure made by cutting away a part of the hoof where the crack was, and said this piece of wood was sufficiently wide to widen the original fissure, and when cut off level with the hoof and smoothed off the horse could readily work. If they had followed him they would understand that the fissure had been forced as wide apart as possible, whatever strain there might be upon the foot ; and it being impossible to move this the margins would be in a much more quiescent condition, a greater state of rest than could be produced by any other principle previously tried.

The Use of the Ecraseur.

Mr. GEORGE CARLESS (Worcester) stated that since the President had introduced the ecraseur to him, one of which was on the table, he had obtained one, and he was very much pleased with it and liked it better than actual cautery. Captain Russell had suggested that he should sleep with it for a few days to get used to it. He did not know whether the gallant captain did so, but he could certainly use it much better than himself.

Captain B. H. RUSSELL said he had taken great interest in Farmer Miles and his principles. There were one or two things one required to know about this instrument before it could be used with confidence, and he would do his best to inform them upon the matter. Farmer Miles had now left England, and therefore they could not have his experience, but he would show them one or two things worthy of notice. The great point was to get the chain secure upon the cord, for if they got the cord straight through the animal would not bleed, but if the cord was slanting it would bleed a gallon, or perhaps more. Farmer Miles invariably in castrating an old horse twists the testicles three times round and then screws them off. He said he liked to see the horse bleed, but if you do not want it to bleed, you place the cord in the usual way, and then screw it up until you find you have got the testicles tight. Then with a sharp nip you have broken through the blood-vessels.

Mr. TAYLOR (Manchester) said he could not rise without thanking them for the invitation to attend that meeting, and according his small meed of praise to the President for bringing so many instruments there. With regard to treatment for sandcrack, as one practising in a large town, the President's remarks were very valuable to him, and not only to him but every practitioner. They had long felt that there was a want of some such treatment as this, and the explanation given by the Professor he hoped would enable them to bring about some such desideratum. With regard to thermo-cautery, he had heard of it but had not seen it actually practised. Still he thought it must be one of value, particularly to country practitioners, or any with a large practice in towns. It was certainly an improvement upon the old system when they had to go to the kitchen fire to heat their irons, and he thought it a step in the right direction. The effect really was the same whether the horse was fired with a poker or any other heated iron. With regard to the "ecraseur," he might say that he had found it successful in the removal of large external tumours, and one especially, from the elbow of a horse, when the animal could not have suffered a second. This was very important, but he had not used the instrument for castration purposes ; still he felt sure that it would be adopted by most practitioners.

Extraordinary Tumour in a Horse.

Mr. BLAKEWAY said he had to lay before them the history of a case which would be perhaps of some interest, although perhaps some of those present might have seen similar cases. As it, however, had features of interest to himself, he would mention the case, together with the *post-mortem*

statement. The case in point was a carriage-gelding, belonging to a client of his, which he had attended for years, and it had never shown symptoms of disease. It was a very good horse, with high courage, and did its work remarkably well. The first time anything of consequence happened was when he was called in to attend an enlargement of the elbow, caused by a bruise, which he subsequently lanced on October 15th, 1878, operating upon it in the ordinary way. This course of treatment was apparently satisfactory, and he did not see it for some time and the horse went to work. A short time afterwards he saw that the horse had bruised the elbow again, and he thought it necessary to cauterise it. This was done on the 1st of April, 1879. Great swelling began to take place in the neighbourhood of the chest and on the fore-quarters. He might tell them the horse always had a peculiar appearance upon the fore-quarters, the superficial veins being much and peculiarly enlarged. This swelling went on to a very great extent in spite of physic and fomentations, and then he arrived at the conclusion that it had got an effusion into its chest. He did not think it necessary or advisable to puncture its chest, as the external swelling was so considerable. It being a case of considerable interest, he requested his employer to let some other veterinary surgeon see the animal, and Mr. Parker, of Birmingham, came over to consult with him. Mr. Parker was also of opinion that there was great effusion upon the chest, and that it was not advisable to puncture, but he asked if there had been any symptoms of Heart Disease. They both came to the conclusion that there were small hopes of saving the patient's life, but administered tonics and liberal diet. The animal, however, died subsequently, and a *post-mortem* examination showed that the abdominal veins were healthy. There was great effusion on the chest, upon either side, and an immense tumour upon the pericardium of the left side, which was evidently pushing the heart to the right side. This tumour was found to be 18 lbs. in weight. There were tumours in other parts of the chest, and one in a lobe of the lung. This tumour was, as far as microscopical examination could discern, what might be considered interior disintegration. The horse for eighteen years had shown not the least symptom of disease, or that it had any affection of the pericardium, and yet this tumour weighing 18 lbs. had been found. The owner thought his (Mr. Blakeway's) operation on the elbow had something to do with the case, and therefore he asked that Mr. Parker should come in.

Mr. PARKER (Birmingham) said when he saw the horse the superficial veins of the fore-quarters were very large. It was a nervous, awkward horse to approach. There could be no doubt about the effusion on the chest, and there must have been something the matter with the pericardium. He had never heard of a similar case, and such an immense mass of tumour he had never dealt with.

Professor PRITCHARD remarked that this was a very interesting case which Mr. Blakeway had brought before the meeting. He was of opinion that the tumour had been forming some considerable time before the operation upon the elbow, and he did not think there was any relation between the two conditions. The effusion upon the chest would lead him to suspect that there was interference with the heart's action, and the *post-mortem* would cause them to see why there should be this effusion and distention of the superficial blood-vessels. He considered the effusion was due to the interference with the passage of the blood through the venous trunks. He should be inclined to think that it was encephaloid cancer and not tubercle.

Election of New Members.

Professor PRITCHARD having announced that the next business was the election of new members, said it was always a pleasurable thing to be able to

add to their number, and he was glad to say they would be able to do so that afternoon.

The following new members were elected :—Capt. B. H. Russell (Grantham) ; Mr. F. G. Heap (Melton Mowbray) ; Mr. F. J. Pyatt (Nottingham) ; Mr. David Aitken (Loughborough) ; Mr. L. C. Tipper (Birmingham) ; and Mr. W. R. Marriott (Cotgrave).

An Amusing Letter.

The SECRETARY (Mr. G. Carless) stated that he had issued a great many invitations, amongst others to Mr. John P. Berry, Northampton, who had sent the following reply :—

"Corn Exchange, Northampton,
"*September 12th*, 1879.

"DEAR SIR,—I shall *not* be able to accept your invitation to Nottingham. The subjects named for the day's business remind me of the 'bill of fare' at our meetings of the Veterinary Medical Society of London, when Professor Pritchard was my fellow-student. How is it that we are about fifty years behind in medicine? our tender mercies must still be written 'cruel.'

"Yours truly, JOHN P. BERRY."

The SECRETARY announced that he had sent a reply regretting the absence of Mr. Berry, and assuring him that they would be pleased to see him at any future meeting.

The Next Meeting.

Mr. OVER suggested that the next meeting be held at Rugby.

Professor PRITCHARD thought that would be a very good town, it being central and easy of access.

Mr. G. CARLESS seconded the suggestion thrown out by Mr. Over.

Mr. COE proposed that it be held at Stoke-upon-Trent, which was, however, afterwards withdrawn, and Rugby was fixed upon.

This concluded the business, and the members joined each other at the festive board.

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the London Hotel, Edinburgh, on the 24th September. The President, Mr. Rutherford, of Edinburgh, occupied the chair, and there was a large attendance of members.

The CHAIRMAN remarked that the meeting should express its great satisfaction at the arrangement which had been come to with the Highland and Agricultural Society, according to which members now required to undergo only one examination. It was desirable to express their sense of the great benefits which the profession had derived from the interest which the Highland Society had taken in them, both as a body and individually. He thought the maintenance of two examining bodies was anomalous, and that the interests of the profession would be best served by the amalgamation which had been brought about, and the holding of one examination by one examining body. He moved that the society express its gratification at the arrangement.

The motion was seconded by Mr. WAUGH, V.S., Stirling, and on being put to the meeting was carried unanimously.

Mr. REID, V.S., Inspector, Leith, then read the following paper on the "Inoculation of Cattle for Pleuro-pneumonia." He said that more than thirty

years have elapsed since Pleuro-pneumonia was introduced into this country, and everything which the veterinary profession could devise has been tried to effect a cure, but without success. So violently did the disease rage, and so futile were the efforts made to arrest its progress, that it became a very serious matter to the feeder and breeder of cattle. "A representation of their grievances was laid before the legislature, and after taking the advice of prominent members of our profession, and practical agriculturists, an Act was passed which had for its object the expulsion of this scourge from our shores. Act succeeded Act, and order after order was issued from the Privy Council, and now we have the Act of 1878, which provides for compulsory slaughter and isolation or restriction for fifty-six days. The profession knows well that even this time is too short for the object in view, and that a period of three months would at least be required. Alongside of this Act, and working in a manner hand in hand, comes Mr. Rutherford with a new idea, or rather an old one revived and clothed in a new form—inoculation. Mr. Rutherford, working against the private convictions of the cow-feeders, gained a footing which gradually increased, till now nearly one-half of the cows in Leith are under his care. Great credit is due to those cow-feeders who first put their animals under his care. They nobly threw aside their prejudices and private opinions, and unreservedly put their stock into his hands. The result of this, in my opinion, demonstrates the complete success of inoculation, which I will try to prove by statistics. At the last census in May we had in Leith 530 cows, and for the four years preceding the following were the numbers attacked with Pleuro-pneumonia :—1874-75, 155 ; 1875-76, 90 ; 1876-77, 107 ; 1877-78, 90—showing an average of 110 cows brought to the slaughter-houses affected with this disease. This year only 38 were affected, the disease being confined to thirteen byres occupied by 138 cows. I attribute even this heavy mortality to the carelessness or negligence of those who have accepted inoculation, as they delayed inoculating the new animals they purchased until, as they said, the disease would make its appearance. The byres in which inoculation is now performed were generally hotbeds of disease, but since then they have all been comparatively clear. In these byres last year there were out of a total of sixty cows, three failures from inoculation, and nine bought-in beasts were affected. The remaining twenty-six were in byres where there had been no inoculation, and in which there were seventy-eight cows. I do not at the present time give to inoculation a curative power, although it is somewhat peculiar that where this disease comes into the cowshed, and inoculation is successfully performed, you may with safety say that after the expiry of twenty days there will be no fresh case. We all know that the disease is a long time in the system before it is seen, even to the practical eye, but by the simple process of inoculation many a case is nipped in the bud. The Act of 1878 has signally failed in two, and if Pleuro-pneumonia cannot arise spontaneously, in three instances. In the first and second cases there were sixty-two and sixty-eight intervening days, and in the third case nearly six months. When Mr. Rutherford introduced inoculation into Edinburgh and Leith, I had under my notice, I think in all, nine deaths by it, but by careful attention and experience he reduced the risk to a minimum, and I have had no fatal case to record since January. I would seriously advise those who have not tried inoculation, and still suffer under this insidious disease, to give it a fair trial, and they will in a short time be enabled to say what others have done before, viz., that it would have been to their profit if they had taken advantage of this operation long ere this. I would also advise those who have taken advantage of inoculation, and are acquainted with its benefits, to continue the process even though their stock at the present time is healthy. Every fresh increase to their stock should be immediately inoculated, and there will be no cause for com-

plaint, and by that means they will for ever banish Pleuro-pneumonia from their premises. I think it well becomes us, as an association of veterinary surgeons, to seriously study this subject, so that we may give out no uncertain sound as to the benefits to be derived from inoculation. We should also show the legislature that instead of paring away at the outside they should strike deep at the root, and make it compulsory that all stock in the United Kingdom at a certain age shall be inoculated under the careful supervision of paid officials. I would give all credit to the Act of 1878 for the great good it has done in checking the spread of this disease. By its rigorous enforcement in the counties it has had a very beneficial effect; but is it necessary to keep in motion this cumbrous piece of machinery? Is it necessary to tax the already overburdened ratepayers to carry it into operation, when we have at hand such a cheap and simple process as inoculation? Inoculation will give confidence to the breeders and feeders of cattle to multiply their stock, and it will open wide our ports and swell our markets with abundance of cheap food to such an extent that even the poorest may have a plentiful supply."

The CHAIRMAN said he agreed with Mr. Reid that the system of inoculation would never be the success it deserved to be till it reached the ears of our legislators, and through them all stock be inoculated when calves, and all imported stock be inoculated (if not meant for slaughter) at the port of debarkation. He had no doubt there were steps in the disease when inoculation was not only preventive but curative. As to the insufficiency of the period of quarantine provided by the Act of 1878, he agreed with Mr. Reid, and questioned whether four, or even six months would be sufficient.

In the course of the further discussion, Professor WALLEY said there was one thing that puzzled him in regard to the practice of inoculation. In London and the neighbourhood inoculation had been practised very largely, yet for one man in favour of it you would get another against it; and Pleuro-pneumonia had not been stamped out of those countries, such as Holland, where inoculation was compulsory.

The CHAIRMAN, in reply, said he could only judge from the results of his own practice; but he offered to go to London at his own expense and arrest any outbreak of Pleuro-pneumonia, provided a Commission was appointed to watch the result. The operation and treatment in London was not the same as that practised here. In regard to the arrestive effects of inoculation there could be no question, and the profession should be glad that the slur had been removed from it of not being able to do anything for this disease.

Mr. STOREY, East Linton, said that in the district for which he was inspector Pleuro-pneumonia had almost died out, though inoculation had not been generally practised. He attributed that result to the manner in which the Act of 1878 had been enforced.

Again replying to Professor Walley, the CHAIRMAN said he believed the effects of inoculation would last throughout the animal's lifetime.

The general feeling of the meeting at the close of the discussion seemed to be that both the Act of 1878 and inoculation were required, and that, with both properly applied in conjunction, the disease could be easily overcome.

Professor WALLEY exhibited several interesting pathological specimens, and narrated their history. He also read papers on "Special Forms of Torsion and Displacement of the Colon," and "Artificial Eyes."*

A short discussion afterwards ensued, and it was agreed that Torsion of the Colon and intestinal diseases in general should form the subject of discussion at the next meeting. JOHN MCFADYEAN, *Secretary.*

* These papers will appear in our next issue.

ROYAL VETERINARY COLLEGE.

THE usual Quarterly Meeting of the General Purposes Committee was held in the Board-room of the College on Tuesday, October 14th.

Present:—Sir C. S. Paul Hunter, Bart., Sir James Tyler, Col. Kingscote, C.B., M.P., Lord Arthur Somerset, Mr. M. J. Harpley, Mr. Barnard Holt, Mr. James Collins.

On the motion of Sir JAMES TYLER, seconded by Mr. HARPLEY, Sir Paul Hunter was unanimously elected Chairman of the Committee for the next year, and a cordial vote of thanks was also accorded to the late Chairman, Mr. G. D. Whatman, for the highly efficient manner in which he had filled the position for upwards of four years.

The ACCOUNTANT read the quarterly statement of receipts and expenditure, after which the names of seventy-seven new subscribers were submitted to the meeting and declared elected.

The Principal's quarterly report was read, from which it appeared that thirty freshmen had entered on their studies at the beginning of the present term; that the "Cheap Practice," instituted last spring, has been continued during the vacation with satisfactory results; also that during the past three months 197 horses, twelve dogs, and four lambs had been admitted into the Infirmary for treatment.

It was further reported that several visits of inspection had been undertaken on behalf of the Royal Agricultural Society, in consequence of the existence of disease among cattle.

Mr. E. S. Shave was, subject to the approval of the Governors of the College, appointed to the post of Assistant Demonstrator of Anatomy rendered vacant by the resignation of Mr. E. L. Dixson.

It was ordered that a glass roof be erected over that part of the College premises where the "Cheap Practice" is carried on, for the purpose of affording the necessary shelter.

Some further business was transacted, and the meeting terminated with a vote of thanks to the Chairman for presiding.

THE VETERINARY PROFESSION *v.* THE ROYAL VETERINARY COLLEGE.

THE adjourned meeting of members of the College of Veterinary Surgeons was held at Freemasons Tavern, Great Queen Street, Lincoln's Inn Fields, London, W.C., on October 1st, 1879. At the earnest request of the meeting, Mr. Robert Ward, F.R.C.V.S., occupied the chair. Among those present we noticed several men of "*standing*":—Mr. George Fleming, F.R.C.V.S., Mr. T. Greaves, F.R.C.V.S. (Manchester), Mr. Freeman, F.R.C.V.S. (Hull), Mr. Hunting, F.R.C.V.S., Mr. Whitworth, F.R.C.V.S., Messrs. Moore, Rogers, Charles, Gerrard, Sampson, E. Coleman, Banham, Sheather, Barker, Gillingham.

The CHAIRMAN said: Gentlemen, as you are aware I dare say, we are assembled here to-night to take into consideration the system of competition carried on at the Royal Veterinary College. This is an adjourned meeting held on June 5th last, when it was decided to make application, through the Hon. Sec., Mr. Moore, to the President of the Royal College of Veterinary Surgeons for permission to hold this adjourned meeting in the council room, which permission was not granted by the President, as this letter from the Sec., Mr. Coates, dated July 2nd, showeth. On receiving this refusal we decided to engage a room at one of the hotels. Considering "Freemasons Tavern," from its former association with the profession (being the first council chamber and examining room of the Royal College of Veterinary

Surgeons before the College acquired the eligible, commodious, and commanding premises in Red Lion Square), we engaged this room and are here this evening. Speaking to a legal friend with regard to the letter refusing the College council room, he said, after perusing the bye-laws, "Why, your President must grant the room, and call a meeting specially to take the subject into consideration before the general body of the profession under bye-law 16. All you have to do is to make a requisition to the President signed by twenty members, and within twenty-one days the meeting must be held." I will now ask the Hon. Sec. to read a letter or two from absent members, and then I shall be pleased to hear and take notes of the remarks of any gentleman present.

The Hon. Sec. read letters from Messrs J. Woodger, jun., J. J. Williams, — Webb, and R. Moreton, regretting absence but anxious for reform.

Mr. BARKER: I attended last meeting, and went away under the impression that some gentlemen were to be appointed to wait on the Governors of the Royal Veterinary College.

The CHAIRMAN: No; it was decided to adjourn and get together a larger body of gentlemen to select from, and at the Royal College of Veterinary Surgeons.

Mr. BARKER continued: I think if we appoint certain gentlemen to wait on the Governors they would listen to us.

Mr. GEORGE FLEMING said: Those of you who are of opinion we should explain to the Governors that the system as now carried on is degrading, demoralizing, and unjust, not only to the members practising in the metropolis but to the profession generally, please notify the same in the usual manner.

Every one held up the hand—right one.

CHAIRMAN, aloud: *Pro—con* (groans). Carried.

Mr. FLEMING continued: I should like to make a few remarks, for this reason, I am sorry to find several influential men are absent, and some steps should be taken to bring this matter under notice of the Governors. The Royal College of Veterinary Surgeons represents our profession, and is entrusted with its welfare. If any one should move in the matter, it should be the President and Council, and in the bye-law it is so laid down. It is the better course, and far more preferable than for you to go to the Governors of the Veterinary College, and I feel sure the Council will take the matter up. Then as to fees. Time has made a great difference in the value of money: two guineas does not go so far now as it did three-fourths of a century ago, the amount of work advertised to be done for a subscriber *now* does not bear comparison with the money of nearly a century ago. It is decidedly bad for the profession to allow this system to go on. If it could be shown the system did benefit the students it would be very different, but it is not so—the very reverse, the time of the teacher being taken up working for the subscribers. We cannot but consider the subscription system a pernicious one. If the subscribers were poor people who could not afford to pay for doctoring, well and good; but it is not so, the list of subscribers contains the names of the wealthiest men in the country. Many gentlemen, possessing tens of thousands, are subscribers because they can get a large amount of work done for next to nothing. The system is degrading to us, and lowers us in their estimation; the gentlemen hold our calling in low esteem when so much can be done for little or nothing. With regard to the metropolitan practitioners and profession generally, it is unfair—they both suffer. A number of the subscribers live in the country, they receive visits from the teachers and send horses up to London to be treated, so the pernicious effect of the system extends far, although in London it is felt principally. The teachers themselves, I am inclined to think, would gladly welcome a change for the better. It may be suggested, that if you abolish this system the school cannot

live! How do other schools live? How do medical schools live? This money that goes into the treasury of the school is really the money of the practitioners—the school lives upon the practitioners in that way. I heartily sympathise with the movement. I am sure, until the system is abolished, our profession cannot stand in the position it ought to occupy. And another thing, as the number of members or subscribers increases, the grievances will be felt more and more. I think it high time the profession should unite, and pressure be brought to bear on the Governors of the Royal Veterinary College.

The CHAIRMAN: I quite agree with all Mr. Fleming has so well said with regard to the procedure of requesting the "head" of the profession, the President of the College, to take this matter in hand—it is a duty upon the President, which he is obliged to undertake. I also agree with the last speaker that the system has gone on sufficiently long. It is not the opulent, well-to-do members, whose business was launched by their predecessors with *the College*, who feel or suffer this system, but the poor needy practitioner, kept confined down the mews, who cannot help himself—or speak, even. It is this system of the College, examining twenty horses and doctoring any number for two guineas a year, that keeps these poor fellows to the smithy and anvil for the crust wherewith to feed the wife and little ones. This system will go on for ever unless we have it removed, and I do believe, when it is explained to the Governors of the College, they will be only too pleased to make an alteration.

Mr. GREAVES: Do I understand that you simply want to point out this to the Governors?

The CHAIRMAN: Yes, that is all.

Mr. ROGERS: I think it best to go to the President at once.

Mr. FLEMING: In going there you require a requisition signed by twenty members. After twenty-one days your President must convene a meeting in Red Lion Square, and at that meeting you must elect a deputation of members to wait on the Governors.

Mr. ROGERS: I think your proposition a most straightforward one, which I do heartily second.

Mr. THOMAS GREAVES: Although not mingling in this dispute, or affected by it, still I have asked myself this question: if such circumstances existed where I practised, what view should I take of them (hear, hear)? I think I should be aggrieved as you are, and feel it my duty to adopt any method to rid myself of them. I am of an opinion nice management alone is needed, for you will find the Governors gentlemen who will listen to reason, and I think if a deputation calls upon them the grievances will be dispelled. I however beg to differ from Mr. Fleming. It is not, in my opinion, the Council's province to interfere between you and the Governors: lay your case before them, they will listen, I am sure, and alter things. If that course did not succeed, then I have no doubt the Council will assist you and take your case in hand; then sign your requisition to the President, and we will take the case into consideration. With reference to examination fee, I think a guinea a fair and reasonable fee, and from an experience I should not advise you to increase it. Elect your deputation, wait on the Governors, and an agreement will follow beneficial to the whole profession. I may tell you I have just seen Mr. Harpley, a Governor who sympathises with you and will assist you.

Mr. DYER: With the first part of Mr. Greaves' address I cannot agree, but I think with Mr. Fleming this is a matter that should go through the Council and Royal College of Veterinary Surgeons. With reference to fees, if Mr. Greaves had been in London as an early or young practitioner, like myself, having to struggle on as best I can, he would find a guinea fee for examinations considered a high one, and have to accept half that sum or starve.

I have arranged to receive a guinea and examine two horses for it, one at some other time. The idea of two guineas for each horse is beyond a possibility. I take it Mr. Fleming's suggestion is a proposition to the meeting?

The CHAIRMAN: Taking firstly the opinion of the meeting thereon. The suggestion by Mr. Fleming is an excellent one, and the President of the body corporate has no option in the matter, the Council have no power to call a special general meeting if they wish to do so. Ten of them must sign a requisition to the President, he alone can call the meetings. Twenty members can sign the same requisition. Now suppose we go to the Governors direct, we shall be stigmatized as a few grumblers who cannot get on, who have come croaking because we are under a cloud. That report of the Veterinary College just issued, if digested, develops how we should be treated. Sign a requisition for a general meeting, hear the voice of the body corporate, and let the legal representatives do the duty legally imposed on them; go straight forward, be of one mind, sign the requisition this evening, and the President can have it to-morrow.

The requisition was here read.

Mr. GREAVES: I think every one will agree that a College like that at Camden Town must have advantages for the students to see practice. What plan can you suggest to enable students to learn their profession practically? Enlighten me on this subject, and then I can explain your views.

Mr. J. MOORE: Poor people should continue to have their horses looked after for nothing, or a trifle. The horses in the College are always locked up—pupils never see them, and most gentlemen's horses are sent there at livery, not for treatment. Let them attend the poor, and let the senior pupils visit free of charge.

The CHAIRMAN: I think there is some little misunderstanding. One of the Governors, Mr. Collins, told me the Professors had been forbidden outdoor practice; any instance of it would be severely dealt with; any Professor visiting a patient or examining a horse outside the walls of the College would be *severely punished.* That they have been out I am certain, and police reports in newspapers verify. I am certain means can be devised to find practice for the students. I had an interesting case from the Kilburn Show. Had this system not existed at the College, I should certainly have sent the case there—not likely when my customer, whose account averages ten guineas per quarter, would have to become a yearly subscriber at two guineas, and I stand a chance of losing him. During the time I was a pupil there, I was disgusted with the place as far as practice was concerned. There was very little practice, except the examinations of horses, and occasionally a foot or hock case of lameness; but cases of "Fever," "Acute Inflammation," and such-like cases never found their way to College. These are the cases the student requires to be well up in, who has never been articled or seen other practice than the College—these cases never get there. I am confident the cases that have been sent to the College under the present system have been insufficient to make the young men there *good* practitioners, or even practitioners at all. The system not having done this, surely a change can be made with advantage. Matters cannot be worse, for no one examiner can say of the young men from there: "They are acquainted with the duties of their profession." If the institution would place itself on terms of brotherhood with the whole craft in the metropolis and country, they would undertake to furnish interesting cases for it and the students—not only that, but find them a cow or two (laughter) to gladden the heart of the tyro in cattle pathology. I think good may come out of this meeting to the students in the College, as it is impossible for them to learn their profession unless the cases come before them.

Mr. FLEMING: I am glad Mr. Greaves is with us, for he is known as a fair

and impartial man. I think he does not see the force of the arguments I brought before you. The head of the body should be the representative, for as the subscribers are scattered all over the country the movement is as much for the country as town. Subscribers send horses from beyond London—hunters are sent to be rested. These men are rich, unknown wealth they possess, and they should be induced to patronise their local qualified men. Those gentlemen in country practice must remember this important fact, that the Royal Agricultural Society of England is in league with the College—the former have advice for a small sum, and subscribers for next to nothing. The system is widespread indeed. If confined to London, then get a deputation in London; but it is all over the country; these practitioners must attend the meeting and join in the movement, and as the R.C.V.S. is their representative body they must go there with their grievances. Mr. Greaves will now see the force of the argument. Hitherto the subscription system has not tended to enlighten the students as to practice. When that system is abolished and a new one established at the College, the students will be taught practice as they should be.

Mr. ROWE: I am quite of Mr. Fleming's opinion. Single we fall, divided we stood, united we *stand*. I suffer from the grievances, particularly in my early days, and for the past seventeen years. In the report of the Governors of the R.V.C. reference is made to cheap practice, and it was intimated that it was this cheap practice we objected to. Not so, for this cheap practice to the poor did not exist until after the first meeting, and was only a week old on the second meeting. It is the two-guinea fee competition which affects us. The pursuit of private practice is opposed to the rules in force—the frequent absence of the Professors to attend race-meetings and police or law-courts is chronic. I fearlessly assert their evidence is injurious to the side arrayed against the Professor, by reason of the weight it carries. I hope this is not a libel or taken as such. The charge for shoeing is against the interests of tradesmen. They charge 5s., I charge 6s., and it is only fair.

Mr. JOHN WARD said the grievance was a just one. He knew people keeping thirty to ninety horses in his radius; these all went to the College, because the fee was lower than any member could charge. He thought the fee should be ten guineas instead of two. The College is now taking the bread from out of the veterinary surgeon's mouth.

Mr. W. HUNTING thought *all* the remarks made were not correct, as that institution supplies material to make surgeons if the students like to make use of it. He came to the meeting to hear what was to be suggested to put a stop to the College underselling the practitioners; the number of subscribers had advanced very rapidly in the last few years. Two things were most objectionable: one was the tremendous amount of work the College undertook for two guineas; the other was the devotion it paid to shoeing. Now he charged a person 6s., which was refused, as he could get it done at College for 5s. "I wrote," he said, "and explained that if he paid me two guineas a year as a scientific institution, I would shoe on the College terms." The two guineas are given to the College as a scientific institution, and if it is not worth such a small subscription as two guineas yearly, it ought not to rank as a scientific institution at all. We have hardly sufficient evidence to show that the whole of the profession is interested. We ought to go to the Governors, but I shall go with the majority.

The CHAIRMAN: It is entirely for the meeting to decide; there are two ways, either go to the Governors at Camden Town, against whom we have the grievance, or request the President of the Royal College of Veterinary Surgeons to convene a meeting of the entire body of the profession, and take their opinion, for the whole profession are affected and must be concerned. This is the third meeting, and it is quite time something was done. Tell

the President plainly this document of membership is of little value to us, when quacks practise and call themselves veterinary surgeons on one side, and the College takes the bread from our mouths on the other side by this system of competition. My own opinion is: Sign the requisition at once, take the opinion of the body present at the meeting at the College, form a deputation to the Governors, and express to them the dissatisfaction with the school. We had better take a show of hands, and let something be done forthwith. (Hear, hear.)

Mr. FREEMAN said that living 200 miles from the College, it did not affect him; did he live in London he should take the matter up. It is a grievance that requires remedying, and it would be better for the College to charge more.

Mr. ROGERS said it would be better to go to the Council.

The CHAIRMAN: If there is a society there must be a body; if a body, a head: go, then, to the head, the President, as the bye-law directs us.

Mr. ROWE proposed, and Mr. ROGERS seconded the proposition—"That a requisition be signed as suggested, and forwarded to the President of the Royal College of Veterinary Surgeons."

After some discussion, and the introduction of another proposition by Mr. HUNTING to go to the Council instead, a show of hands was called for, when eighteen exhibited for the requisition, and four against.

The requisition was then read by the CHAIRMAN, and laid on the table for signature.

Mr. FLEMING then suggested that a small committee be appointed to draw up the objections, for no doubt arguments would be brought against the movement. He felt sure good would come of it; the Governors were a body of gentlemen, some of the highest in the land, who would not go into an unfair competition. They had no idea what was done at the College; they did not know how the school was conducted; it should be a scientific institution, and not an establishment for underselling or competing with its own members all over the country.

Mr. FURNIVALL made some remarks about the Earl of Dudley and Sir Edmund Latchley, with whom he had been conversing on the subject, and said the House of Lords or Commons would support a change.

The requisition, as follows, was then signed:

"London, October 1st, 1879.

"*To the President of the Royal College of Veterinary Surgeons.*

"SIR,—We, the undersigned Members of the Royal College of Veterinary Surgeons assembled at Freemasons' Tavern, Great Queen Street, W.C., hereby request you to call, under Bye-law 16, a Special General Meeting of Members of the College, to consider the system of competition maintained at the Royal Veterinary College, St. Pancras, N.W., which in the opinion of this meeting is injurious to the Profession generally.

ROBERT WARD, London.
JAMES MOORE, do.
WM. FURNIVALL, Kingston.
CHAS. JAS. WHITWORTH, London.
HENRY DYER, do.
WM. ROGERS, do.
F. G. SAMSON, Mitcham.
J. M. GILLINGHAM, Croydon.
THOMAS MOORE, London.
JAMES FREEMAN, Hull.
JOHN WARD, London.
JAMES ROWE, London.
HENRY SURMON, London.
GEORGE BAILEY, do.
JOHN GERRARD, Romford.
EDWD. COLEMAN, London.
WM. HUNTING, do.
G. J. BANHAM, do.
ALBERT R. CHARLES, London.
THOMAS GREAVES, Manchester.
CHAS. SHEATHER, London.
THOS. BARKER, do.

The usual vote of thanks to the Chairman and the speakers terminated the proceedings.

Army Veterinary Department.

Gazette, September 26.

ROYAL ARTILLERY.—Veterinary Surgeon, First Class, John Ferris, from half-pay, Royal Artillery, to be Veterinary Surgeon.

VETERINARY DEPARTMENT.—Veterinary Surgeon on probation Francis Kennedy resigns his commission.

Gazette, October 10.

2ND LIFE GUARDS.—Veterinary Surgeon, First Class, J. A. Rostron, from the 5th Lancers, to be Veterinary Surgeon, *vice* Veterinary Surgeon, First Class, G. Fleming promoted.

VETERINARY DEPARTMENT.—Veterinary Surgeon, First Class, G. Fleming, from 2nd Life Guards, to be Inspecting Veterinary Surgeon, *vice* B. C. R. Gardiner, placed on retired pay.

Gazette, October 17.

VETERINARY DEPARTMENT.—Veterinary Surgeon on probation J. T. Dibben to be Veterinary Surgeon.

The following appointments have been made by the Commander-in-Chief of Madras, viz. :—Veterinary Surgeon G. I. R. Raywent, 1st Light Cavalry, is appointed to the 3rd Light Cavalry, Sangor, *vice* Elphick ; Veterinary Surgeon M. Anderson, R.A., Secunderabad, will take veterinary charge of 1st Light Cavalry ; Veterinary Surgeon S. J. Slattery, doing duty with 12th Lancers, will relieve Veterinary Surgeon Anderson of charge of Battery of Artillery.

The *Army and Navy Gazette* for October 18th has the following allusions to the Department :—

"The promotion of Veterinary Surgeon G. Fleming to fill the vacancy among the Inspecting Veterinary Surgeons, cannot fail to give the utmost satisfaction to all friends of the veterinary profession. There is, perhaps, no man living who has done more to promote the interests of veterinary science than Mr. Fleming, and his selection for the inspectorship is a gracious acknowledgment of his services, and will meet with the approval of those even whom he has superseded, who will be the first to admit his claims, knowing as they do how much the young veterinary officer of to-day owes to him as a recognised authority on all questions of a professional character. A correspondent addresses to us the following very sensible letter, which we trust the members of the Department will take to heart :—'For some months past, you have most generously set aside a portion of your valuable space for the ventilation of the grievances under which the junior officers of the Veterinary Department are labouring, and I cannot but think that a disposition is now being manifested to take advantage of your good-nature, for the purpose of introducing subjects altogether foreign to the points at issue. For many years past, the system in vogue in the Army Veterinary Department has been shown to be most imperfect, and in many cases to have pressed harshly upon some of its members. The *system* only (as far as I am aware) has been attacked, and there can therefore be no excuse whatever for the introduction of the personalities which some of your correspondents seem to think necessary. The point in the veterinary question patent to every outsider is that since the promulgation of the Warrant of 1878, a section of the Department seem to have become converted (let us hope, only temporarily) into departmental Zulus, sticking right and left, and assegaing the reputations of friends and foes alike ; indeed, some of them seem utterly reckless, and ready to sacrifice

everything to ensure some of their *confrères* getting to close quarters. Depend upon it, we are much too small a body to throw mud at one another without some of it sticking to the fingers, and the characters of the veterinary officers of no branch of the Service can be tarnished without the whole body being more or less affected thereby. It is only a few weeks ago that Col. Arbuthnot, in writing to your contemporary the *United Service Gazette*, stated that he had every reason to believe justice would be done to those veterinary officers whose interests have been injured by the action of the present Warrant. With our cause in such good hands, shall it be said we cannot await the issue in confidence and with patience? Whatever be written in the future, let us, at any rate, eschew personalities and recrimination, which can be productive of nothing but harm; and remember that even promotion, unjustly withheld, can be antedated, and pay deferred can in the end be made good, but the character of an individual once stained, or the character of a body once overcast, may never regain its pristine lustre. After the disgraceful letter of a correspondent in a contemporary, and even more disgraceful editorial remarks thereon, it is full time that the members of the Department adopted moderate language, or the character of the whole Department will be lowered, at the caprice of a few black-sheep.'"

Obituary.

G. I. AUSTIN, M.R.C.V.S., of Pokeno, New Zealand, died suddenly of heart disease on July 7th. He graduated in 1847.

Notes and News.

POISONOUS ACTION OF FLAX.—The *Magazin der Thierh eilkunde* gives an account of some experiments carried out by Schütt, with the view of ascertaining what foundation there may be for the opinion so often advanced, that flax exercises a poisonous effect upon ruminants eating it. For this purpose he gave large quantities of nearly ripe flax-stems, from which the seed-capsules had been removed, to a cow, and though the experiment was continued for a considerable time no injurious effect of any kind was noticed. A sheep fed on green flax exhibited no unfavourable symptoms beyond slight Diarrhœa; but the administration of fully ripened flax with the seed-capsules attached, was followed by a quasi-paralytic condition, with dilated pupils, fixed eyes, and strong convulsions, terminating in death. From these symptoms, and the appearances presented on *post-mortem* examination, Schütt draws the conclusion that the capsules contain an acrid narcotic principle, which induces inflammation of the intestines and disease of the kidneys, and probably has also a narcotic effect on the nervous system. The Diarrhœa he ascribes to the mechanical irritation of the mucous membrane of the intestines, excited by the indigestible flax fibres.

CATTLE PLAGUE IN RUSSIA, SILESIA AND BESSARABIA.—The Russian *Official Messenger* publishes the following details respecting the Cattle Plague in the provinces adjacent to Austria and to those rivers flowing into the Black Sea by which are conveyed cattle intended for exportation. According to this statement there had been up to the 1st of this month—from what date is not mentioned, but most likely from the beginning of the year—in

the districts of Ismail, Khotine, Soroka, Kichenev, and Orgheff, in the Government of Bessarabia, 1,877 animals attacked with the disease ; of these 553 died and 386 remain ill. In the districts of Zhitomir, Novgorod, and Kremenetz, in the Government of Volhynia, 293 animals were attacked, of which 114 died and 79 are still ill. In the districts of Ekaterinoslaff, Verknydnieprovsk, Bahkmoot, Pavlograd, and Novomoskovsk, in the Government of Ekaterinoslaff, 3,659 animals were attacked, of which 1,423 died and 1,217 remain affected. In the districts of Kamenetz, Proskurov, Veeneetza, Haissin, Olgopol, Balta, Yanypol, Moheeleff, Ookheetsa, in 35 different localities in the Government of Podolia, 4,004 animals were attacked, of which 3,383 died and 606 continue to be affected. In the districts of Kherson, Elizavetgrad, Tiraspol, Odessa, and Annanieff, in 54 localities in the Government of Kherson, 1,460 animals were attacked, of which 389 died, and 566 are still affected.

Although the Russian authorities have shown a little more energy this year than on previous occasions in their attempts to suppress the Rinderpest, the disease has obtained so complete a hold on the Bendzin district that the German authorities at Oppeln found it necessary to issue orders for the complete stoppage of all traffic on the frontier line from Boronow to Ponoschau. No person is allowed to pass from place to place within the suspected area on foot, and all passengers coming from Russia by train are detained and put through a process of disinfection in specially constructed buildings at either Schoppinitz or Kattowitz. Detachments of military, amounting in all to the strength of a battalion, have been sent to aid the customs and police forces in watching the frontier and preventing the smuggling of cattle across the lines. In spite of all these precautions, however, the disease made its appearance in Königshütte at the end of September, and after its nature had been officially confirmed by the Government veterinary authorities, the special regulations provided for such a contingency were at once put in force with the utmost stringency.

Advices from Bessarabia state that Rinderpest is raging there with great virulence, from 30 to 35 per cent. of the animals attacked succumbing to the disease. It broke out in the course of last spring, and as no sanitary precautions of any kind were taken, or any measures adopted to check its course, the disease has spread from day to day till it reached its present formidable proportions. In this it has been much assisted by the complete absence of veterinary surgeons in the province, and by the unusually hot weather which prevailed during the latter part of the summer. The cattle trade is completely at a standstill, and as stockbreeding forms the chief industry of the population, their condition is miserable in the extreme. Within the last few years Bessarabia has suffered most severely from visitations of Rinderpest, nearly 11,000 head of cattle dying from it in 1877 out of a total stock of 350,000 or less.

The Poison of Marsh Fever.—The physical cause or poison to which Marsh or Intermittent Fever is due, was made the subject of special investigation during the spring of the present year by Signor Tommasi, professor of pathological anatomy at Rome, in conjunction with Professor Klebs, of Prague. According to an account laid by the former before the Academy of Rome, the investigation was rewarded with complete success. The two investigators spent several weeks during the spring season in the *Agro Romano*, which is notorious for the prevalence of this particular kind of fever. They examined minutely the lower strata of the atmosphere of the district in question, as well as its soil and stagnant waters ; and in the two former they discovered a microscopic fungus, consisting of numerous movable shining spores of a longish oval shape, and ·9 micromillimètre in diameter. This

fungus was artificially generated in various kinds of soil; the fluid matter thus obtained was filtrated and repeatedly washed, and the residuum left after filtration was introduced under the skin of healthy dogs. The same thing was done with the firm microscopical particles obtained by washing large quantities of the surface soil. The animals experimented upon all had the fever with the regular typical course, showing free intervals, lasting various lengths of time up to 60 hours, and an increase in the temperature of the blood during the shivering fits up to nearly 42 deg., the normal temperature in healthy dogs being from 38 deg. to 39 deg. centigrade. The filtrated water only caused small changes in the temperature of the body, even when five times the original quantity of water was administered, and the trifling fever actually caused was not of an intermittent character. The animals artificially infected with Intermittent Fever showed precisely the same acute enlargement of the spleen as human patients who have caught the disease in the ordinary way, and in the spleens of these animals a large quantity of the characteristic form of fungus was present. The fungus was also found abundantly in other lymphatic vessels of the animals. As the fungus here grows into the shape of small rods, Tommasi and Klebs gave it the name of *Bacillus Malariæ*. The strictly scientific method pursued in this investigation does not admit of a doubt that the accomplished investigators have really discovered the real cause of the disease in question. The discovery may be regarded as another of the series of which those in connection with Inflammation of the Spleen and Diphtheritis were earlier examples. Against the Intermittent Fever poison which is connected with this newly-discovered microscopic fungus, the medical art was formerly as powerless as it is still against Diphtheritis and inflammations of the spleen. For Intermittent Fever, however, medicine was provided with a remedy when the virtues of quinine were made known, and it may be reasonably expected that, as in the latter case, so against the poison of the Diphtheritic fungus and that of splenic inflammation, medical science will sooner or later discover their appropriate antidote.

TRICHINOSIS IN GERMANY.—A notable case of Trichinosis is reported from Merseburg. The inspector of the district had declared a certain pig killed by his brother-in-law free of the disease, and the pig had accordingly been eaten without suspicion. Shortly after, however, the whole family were taken ill with Trichinosis. The brother-in-law died of it, and the inspector was prosecuted for carelessness. The meat was examined by 100 inspectors in the course of the trial, ten of whom declared the pork free of trichinæ. As, however, experts declared them clearly present, it was evident that the deficiency lay in the microscopes used. This is curious, and shows the dangers to which the consumers of raw ham or bacon are exposed even under a system of inspection.

DOG DESTRUCTION IN NEW YORK.—It is stated that no fewer than 5,400 dogs have been killed during the season at the New York City dog-pound, which has just been closed. The contractor is said to have realised a fine profit on the skins, which he sold to the glove makers.

Correspondence, etc.

"FARMER MILES" AND HIS METHODS.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Having seen Farmer Miles operate a few times, perhaps you may not think it presumptive in me to state my opinions thereon, especially as some of your correspondents desire information regarding castration by

the *écraseur*, which he seems to have been the first to introduce to the notice of the profession in this country. I had expected that your columns would have been flooded with communications from the numerous correspondents who have witnessed Farmer Miles operate ; but strange to say, not one who can speak from experience as having seen the Farmer operate, or who have used the *écraseur* themselves, notwithstanding the number that the Farmer has attached to his later prospectuses. This may probably arise from their being bound to secrecy unless the cash be forthcoming, which is probably the secret of the Farmer's success with the members, and who do not care to publish their gullibility. However this may be, as I did not get into the Farmer's secret, I have nothing to reveal, but simply desire to record my ideas of the man and his methods so far as I saw and was able to judge as an onlooker, for the benefit of all whom it may concern, if any can be benefited by my cogitations.

Of the man, I beg to say that he is genuine, and that he is what he professes to be, a castrator of ridglings, or to speak more technically, *Cryptorchids*. This is his *speciality*, although he undertakes the emasculation of all domestic animals, male and female, the feathered tribe not excepted ; and his method of operating upon the male domestic fowl is quite ingenious, safe and expeditious.

His intelligence is certainly above the average of his class, but this can be easily accounted for, from the fact that he has come in contact with so many different minds in different countries, and being so long attached to one operation acquires a glibness of expression that is characteristic of the Yankee specialist, and is apt to dazzle and bewilder the uninitiated.

He is possessed of great suavity of manner and expression, which disarms criticism and constrains confidence in his powers, and which, added to his agility and correctness in operating, completely carries the beholder along with him for the *nonce* as if your mind were simply a mirror of his.

Regarding his feelings towards the profession, I believe they are moved by monetary considerations, and that he will sell his secret—if secret he has—to the highest bidders, be they professional or otherwise. Indeed, I believe it is his love for English gold that has lured him across the Atlantic, or why put such a premium upon his ropes and instruments, as to sell them at about a thousand per cent. of the cost of production, a premium that will prevent more than the half of the profession from ever seeing them. Such proceedings savours too much of charlatanism to be designated by the term of "*most honourable*" from a professional point of view, as used by Captain Russell, F.R.C.V.S., Grantham. Farmer Miles, or any one else, has a perfect right to sell his secrets and his system in the best market ; but when he or his disciples profess to have and sell secrets and instruments at an exorbitant price, they scarcely recognise the code of professional ethics. Captain Russell no doubt found, as I did, that the Farmer was a nice genial gentleman, a dexterous operator, an adept at his business, and his feelings regarding the profession were regulated by the amount of money he could get out of it.

Mr. Lyford's excellent essay on this subject in your August number displays the true professional feeling, and, as I think, discloses most thoroughly Farmer Miles' secret ; and this brings me to notice his methods of operating, and which are certainly worthy of imitation. His methods of casting and fixing are certainly superior to any I have ever seen, and I have little doubt but they are essential elements to his success. They are somewhat complicated, however, and one is apt to get wrong among such a quantity of ropes, hitches and half-hitches until they get used to the system.

They possess the advantage of enabling you to throw down the animal in a small space, and just where you want him, and these are no mean advan-

tages when you have to deal with a thoroughbred two-year-old colt that has never been haltered, and that it would require five or six men to hold were he to be taken out into a large yard or field. Their complicated nature makes them very difficult of application to every colt, but if you have plenty of assistance and small space they are the best for a high-mettled colt, or indeed any colt.

For the benefit of your readers who have not seen them, I may attempt a description. They consist—in addition to the ordinary ropes—of a set of rope hobbles, with nice iron rings for buckles, the leading hobble stringing through these rings and ending on the off fore leg, on which there are two hobbles, which has the effect of allowing you to free the two hind legs as soon as you can adjust the ordinary ropes upon them when the animal is down ; in fact you pull the colt down with them, and must take them off before you can get the ordinary fastening ropes down into the hollow of the heels, where they usually are in the ordinary way of casting, and where they must be before you can secure the animal. The method of fixing the hind legs is his peculiarity and gives the animal less pain, less leverage, and consequently less inclination to struggle and injure himself or disturb the operator. Instead of fixing the ends of the ropes that draw up the hind legs, to the neck rope or to a "back strap," you pass them under the loins and over the croup, bringing them up between the legs and finally fixing them each one on its own foot, which has the double advantage of keeping the legs in a naturally flexed position, and preventing them being spurted forward, as they frequently are when made fast in the usual way. You have thus the ropes crossing each other between the hind legs, and they are sometimes somewhat in your way when operating, unless you use the spreader which in ordinary cases is not essential or even necessary.

His method of opening the scrotum is worthy of remark. He uses no knife, there is no clutching and grasping at the testicle in order to get it into a proper position to make an incision, but with a small hook, with a sharpened concavity the depth he wants to cut, he makes a bold incision just the size and in the situation it ought to be. In order to do this he grasps the sheath in his left hand and stretches it forward, when he can see exactly where he is cutting. This properly accomplished, the testicles generally appear of themselves, and there is no grasping or pulling required, to bring them within reach of the operator or his instruments. Mr. Miles regards this as one of the secrets of his success. He is very chary of pulling the cord, as is too frequently done, or even handling it, but uncovers the testicle, throws the chain of the écraseur over it, or as he frequently does, over both testicles at once, gives the screw of the instrument a few turns and the "*nuts*," as he calls them, drop off, the whole operation being accomplished in less time than you can read the description of it.

Regarding the écraseur as an instrument for castrating in the ordinary subjects, I cannot say that I am as yet very partial to it. I do not find that it gives you that immunity from hæmorrhage which Mr. Miles claims for it ; indeed, I prefer the torsion to it, only that you cannot take both testicles off at once with the torsion forceps, as you can with the ecraseur. In two of the colts operated upon by Mr. Miles when here, there was a nasty hæmorrhage, and several of them swelled nearly as bad as some do from the actual cautery. As to the cause of hæmorrhage and swelling, I believe more depends upon the constitution and condition of the animal than upon systems of operating, but of all the systems I prefer the torsion forceps. They are safe, scientific, and surgical, more so I think than the écraseur. The principle of the écraseur is neither more nor less than *compression*, whereas the torsion breaks up the inner coats of the artery and effectually plugs it. Surgeons in taking up an artery invariably twist it to stop hæmorrhage. The compression exerted by

the écraseur in some weakly subjects gives way, and hence the secondary hæmorrhage frequently resulting from it.

A few days ago I castrated a bull, and in order to test the efficacy of the two systems, I used the écraseur on the first "*nut*," and the torsion on the other. The one done by the écraseur bled most profusely, and owing to the size of the "nuts" you have to run out a large piece of the écraseur chain to get it over, and this makes it a very slow process in respect of the torsion forceps, that you can soon adjust, and which effectually stopped the hæmorrhage in the other. Nor is this all the advantage from the torsion, for the one done by that method healed much more kindly than that from the écraseur. For operating on *Cryptorchids* I believe the écraseur will be the best, and it is probably from his using it in these subjects so frequently, that it has become so vaunted and so valuable in the hands and in the eyes of Farmer Miles.

For excising tumours with broad bases, or indeed any tumour, it is invaluable, and for *schirrhus* cord or *champignon*, I fancy it would be very useful; but with torsion forceps you can never see this condition. As at present manufactured, the chain is too short and the screw too fine for other purposes than that of castration, and they are even too light, for I broke the chain of one the first time I tried it.

Upon the whole I think the profession ought to feel grateful to the Farmer for showing us our deficiencies in this matter, and stirring us up a bit with these "*Yankee notions*." Had he not fixed his figures so high, I think he would have done more good and gone home with a better balance at his bankers.

"May he live long and prosper."

September 16th.

Addendum.

The crowded state of your columns, together with my own mental laziness, permit me to add a few more remarks on "Farmer Miles and his Methods," as a sort of reply to his catechetical communication in your October number.

As I had anticipated, it seems he has nothing in the shape of a profound secret whereby he can initiate any one into the mysteries of "rig castration," without putting their own "hand to the plough," or "their shoulder to the wheel." He evidently puts more stress on his plan of throwing and securing horses—which is certainly an improvement on any method I had ever seen or heard of before—than any particular way of putting your hand into the abdominal cavity or up to the abdominal ring, to extract the defective testicle therefrom.

The tone of his communication contrasts strangely with some of his earlier productions from America, or when he made his appearance here some twelve months ago. One would have thought from them that he had got some special dispensation for handling and cutting the peritoneal tunic of the horse at his pleasure. I suppose, however, that it is just the way of doing things they have in America; so that it may be said of him, "that his country excuses his manner."

The man who can roar loudest and leap the highest is the man for America: they always speak in the "*superlative*," and know nothing of the "*positive*" and "*comparative*." They all seem to have a strange fondness for English gold; and when they happen to stumble upon any little secret not generally known, or acquire any manipulative dexterity in performing any simple operation, they instantly get up some sensational advertisement regarding it, and shroud it in mystery, hastening off to the "Old World," as they call it, to dispose of it to the gullible inhabitants thereof. Who does not remember the nice fortune that Rarey carried over the Atlantic for teaching the art of

taming wild horses by simply tying up their fore-leg with a strap and exhausting their powers of endurance.

This *penchant* of the American people is not confined to the secular portion of it, for we have lately had a popular preacher from Brooklyn drumming for gold in the metropolis and provincial towns, and the religious press of the day teem with notices of the sharp practices he resorted to to gain his end. Well, I daresay it is only an ordinary exhibition of human nature which we are all more or less subject to.

But the point is, why should "Farmer Miles" profess to be a public benefactor, and all the while profess to sell a secret which must not be divulged for five years, and which, scientifically considered, is no secret at all? Why bind up the recipients of the secret to a five years' silence, if it is not from sheer greed of gain, by preventing them informing any one else, so that he only may have the power to instruct? His solicitude for the safety of the stockowners of England is truly surprising, if it only were sincere; and also his sympathy for the sufferings of animals operated upon by novices not "fully instructed." Does he guarantee that all those he may instruct will be able to operate, so that no "unnecessary cruelty will be inflicted" in operating, and that the operation of "rig castration" may not be brought into disrepute? I doubt it. Some whom I know he has instructed prefer the cautery to the *écraseur*, and the latter according to his ideas and teaching is the most humane method. Now why is this? It must be that he has failed to impress upon them his ideas of what constitutes the most humane way of operating. At all events, the parts will swell as much after the *écraseur* as they sometimes do after the cautery, and which has probably less to do with the manner of operating than the condition of the subjects operated upon.

Mr. Miles has carefully avoided saying anything about his percentage of losses, which is generally regarded as a criterion of a good or bad system.

Mr. Lyford in his essay above referred to puts it at three per cent. Well, if this is a correct estimate of his success it is not greater than that of plenty of castrators in this country, for some of them think no more of castrating a colt than they do of a pig or calf, and they almost invariably use the cautery.

I must not, however, occupy more of your space on this subject, although I should have liked just to notice a few more of his points—for instance, his pathological notions; but as this epistle is already too long, I shall conclude by thanking you for the favour bestowed, and asking the Farmer one question regarding the matter of insurance. It is this: At what period of time after the operation does he consider a colt safe from the effects of it? Or how long does his responsibility last when he insures a colt? An answer would interest many members and gratify

Yours truly,

Romford, 13*th October*, 1879. JOHN GERRARD.

THE PROFESSION'S GRIEVANCE WITH THE ROYAL VETERINARY COLLEGE: ITS PRACTICE AND ITS FEES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—It may not be generally known to the members of the Royal College of Veterinary Surgeons that this is the first time in its history that they have been summoned by the President to assemble and form a special general meeting of the entire body. The importance of the subject for consideration and deliberation will, it is hoped, bring together a large gathering, so that

there cannot be a doubt that the whole body has spoken on the subject, and given its veto on the question.

When Saint Bel founded the Veterinary School at Camden Town, there cannot be a shadow of doubt that the two-guinea yearly subscription was intended as a donation on the purest principles of charity to a new Institution, opening up a fresh and useful field of scientific research. As with many other charities, this one has drifted into quite a different channel, and has now become a most damaging one to the science it was intended to foster.

Although for many years the profession has groaned under the pernicious system, it was not felt so acutely as at this present, and for this reason: Soon after the death of Professor Spooner, in 1871, the establishment underwent a change. The accommodation of the Infirmary was doubled at least; a system of augmenting the subscribers was devised under the present Principal; and everything done to place the establishment in the foremost rank as a co-operative business, for the sole purpose of trade, instead of placing it foremost as the leading veterinary teaching institute, on sound scientific principles, in Europe, such as the largest and finest stock-rearing country should possess. Whereas we now have the leading teaching-school competing with her own graduates all over the kingdom, upon such terms that the clever yet needy graduate is compelled to withdraw. Now if trade, or may I say practice, was needed by the School for her pupils, one would think trust would have been placed in the teacher's abilities alone to draw practice under the College portal; the supposed highly scientific and professional attainments of the professors should alone suffice to attract the wealthy patron.

The Royal Agricultural Society has materially assisted the institution, no doubt; but I do think the Society has never seen how prejudicial its system of exclusive patronage has worked against the interests of the profession in general, especially that branch it wishes to elevate, "Cattle Pathology." For many years one voice alone has been heard by the Society on all matters in cattle pathology; thereby entirely ignoring any rising talent, as the exclusive appointment of the College staff to all Shows testifies.

Again, the various other societies follow *en suite*, the intelligent practitioners being shut out, from the simple fact that "Professor" sounds so grand and attractive.

However, it is to be earnestly hoped that now the "ball" has been opened, the "cat belled"—as some one termed it—every member will prove the College motto, for the first time, to be a reality in honest truth, and assist to the utmost in bringing about a re-union between the Royal Veterinary College and her graduates or former pupils; and that the College, on her part, may be made to see her true position and interests, not only to herself and the profession, but to the public—indeed, I may say to the commonwealth of England: she by taking her position as an institute of science, existing for its cause and advance, in rearing the youth entrusted to her teaching sound scientific and practical members of one of the most noble callings a life can be devoted to.

To accomplish this, let her assist in removing the union she has so long nurtured—the blacksmith's business with the medical profession—and thus make her first step in progression, elevating her sons from the opprobrious epithet, "farrier." Then let her innovate a reasonable tariff or scale of fees, such as may yield a fair and proportionate return to her *alumni* for the labour, anxieties and expense incurred in following her teachings. Then may she be led to assist all and every *alumnus* in his professional career, and when Justice calls one of her experts to explain a mysterious problem, let her deeply ponder o'er the sum ere she sends her "*savant*" to the front, so that she may not answer wrongly and afterwards lament.

And I think I may add, lastly, let her quite forsake business, leaving the graduates to tender all service to the public and police, eschewing such practice for the more lofty occupation of professors and gentlemen.

Now, sir, I think when all is impartially weighed, our meeting will be productive of an epoch in veterinary science tending to its advancement; and you, sir, will receive the heartfelt thanks of every member for the earnest zeal and unflagging energy with which you have espoused the "grievances" of the civil practitioners in general.

If any part I have taken has assisted to bring about an *end* so much desired, I am truly thankful for the honour done me in being permitted to take the part.

Trusting the Camden Town Governors and teachers will be led to view the business dispassionately—and I am sure the former will, and have every reason to believe the latter on due reflection will also,

I beg to remain, yours,

London, W., *October 20th*, 1879. ROBERT WARD, F.R.C.V.S.

THE EFFECTS OF LIGHTNING UPON ANIMALS.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I noticed in the VETERINARY JOURNAL for this month, a few remarks on "The Effects of Lightning upon Animals," and I beg permission to make some comments thereon. Your correspondent states that "coagulation of the blood took place gradually." Now, sir, I have always been taught that when an animal was struck dead by lightning the fibrin of the blood was absorbed by the electric fluid, and therefore that coagulation of the blood was a physiological impossibility. In several cases which have come under my notice within the last few months, I have always found the blood in a fluid condition, and no *rigor mortis*, as the *post-mortem* examinations have not been made until ten or twelve hours after death. I believe that *rigor mortis* sets in immediately after death, but only lasts for a very short time. In fact, I have had the opinion of several professional gentlemen upon the subject, and they very much doubt whether *rigor mortis* does actually take place at all. Not having seen any reference made to this very important question in any veterinary work, I should very much like to have your valuable opinion on the matter. Apologising for trespassing on your time and space, I have the honour to be, sir,

Your obedient servant,

HUGH H. MILLWARD, *Veterinary Student*

October 10th. (*With* J. T. ROBERTS, M.R.C.V.S., *Long Sutton*).

[Our contributor last month and the present correspondent justly complain of the absence of any mention of the effects of lightning on animals in English works on veterinary medicine, but it is to be regretted that many more important and common subjects are equally neglected in our literature. From the days of Pliny, Seneca, Plutarch, and other ancient writers, to the date of our correspondent's letter, the effects of lightning have been observed and commented upon, and the literature of the subject is very vast, albeit very scattered.

We have not space at present to discuss the subject, but will endeavour at a future opportunity to bring it before the profession, and thus supply what appears to be a want in this direction. In the meantime, we may note that the effects of the electric fluid upon animals are various, and the results are not always the same. As to the condition of the blood, John Hunter was the first, we believe, to state that it did not coagulate; and many observations

go to show that coagulation is rare, the blood being generally black and fluid. But this is not always the case, and there are records of instances in which the blood has been found coagulated in the bodies of animals killed by lightning.

With regard to the presence of *rigor mortis* in such cases, here again we find the some inconstancy. In same instances it is very well marked many hours after death, in others it appears to be entirely absent. Hunter stated that in animals killed by lightning and electricity the muscles did not contract, thus proving that the excitability of these was at once destroyed. But this statement is opposed by facts ; and even in those instances in which *rigor mortis* was not perceived, there is good reason for doubting whether it was really completely absent, as it possibly supervened immediately after death and as rapidly disappeared. Brown Sequard's experiments upon rabbits with electro-magnetism tend to prove this. The effects of lightning on animals is a subject which is of great importance in a sanitary, as well as in a physiological and pathological point of view, and deserves at least careful discussion.]

A DISPUTED CASE.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Enclosed is a peculiar point affecting the soundness of a seven-year-old bay cart mare, which was sold warranted sound. The anomaly is a rupture of the perineum, extending the whole length between the anus and vulva. The external anal sphincter is permanently divided (it has been so for some years), and looks more like a malformation than having been due to an injury ; but I understand it was done on a hook about the stable door. The most disagreeable feature of the case is the sound emitted in passing flatus, and a small quantity of fæcal matter gets retained in the vagina after each defæcation. The mare was served by the stallion two years ago, but did not have a foal. I do not know if ever she had a foal. I see similar cases described in Mr. Fleming's valuable work on " Veterinary Obstetrics," which go far to prove that the anomaly in this case will not interfere with the animal yet being got with foal. I am convinced that had the other veterinary surgeons been in possession of this work on obstetrics, there would have been no diversity in all our opinions as to that point. Should you consider the case interesting and worthy of a corner in your valuable journal, I shall feel much obliged.

I am, yours faithfully,

Kincaldrum, Forfar. JAMES RITCHIE, M.R.C.V.S.

IMPORTANT DECISION WITH REFERENCE TO THE SOUNDNESS OF A HORSE.

The following interlocutor and note will explain the nature of a case just decided by Sheriff Robertson at Forfar :—

The Sheriff-Subsititute having heard parties' procurators, and having made avizandum with the whole case, finds it proved that the mare in dispute was sold under a warrant of soundness by the defender, William Watson, to Andrew Spence, one of the pursuers. Finds that this mare is blemished by having ruptured the membrane between the vagina and the rectum. Finds that this rupture is of long standing, and probably is the result of an injury during parturition. Finds, in accordance with the medical evidence adduced, that this blemish does not interfere with the health or working power of the animal, nor does it necessarily prevent conception. Finds in law that the mare is sound. Finds, therefore, that the defenders are not

bound to take back the animal, nor are the defenders entitled to hold that the bargain is void, therefore ordains the Clerk of Court to deliver up the consigned money, being the sum realised for the mare when sold under warrant during this litigation to the pursuers or their procurators. Finds the pursuers liable in expenses, remits the defender's account, when lodged to the Auditor for taxation and report, and decerns.

(Signed) ALEX. ROBERTSON.

Note.—The question whether this blemish or rupture (which is of old standing) affects the general health or the working powers of the mare in dispute, is one in which the Court must necessarily be guided by the veterinary evidence ; and before considering this the Sheriff-Substitute is prepared to hold that no animal can be considered sound if any complaint, blemish, or malformation exists at the time of sale which will shorten life or impair the animal's working powers. The result of the medical evidence is, however, to satisfy the Sheriff-Substitute that this mare is none the worse of the peculiarity complained of by the pursuers. It does not interfere with her digestive organs nor with the work of the urinal or other canals. And in point of fact the animal is perfectly well and healthy and in full working order at the present time, having given perfect satisfaction to her present owner for the last two months. It seems that the pursuer, without having given the mare a full trial, and without having called in a veterinary, surgeon, assumed that she was worthless, and at once put her at livery pending this litigation. The blemish or rupture was unsightly, and from this alone the pursuer thought he had been taken in by the defenders. The peculiarity complained of is one that might possibly prevent the mare from having a foal. But as the pursuer admits she was not bought specially as a brood mare, the Sheriff-Substitute cannot hold that this possibility makes her unsound. There is no authority holding that a barren mare is an unsound animal. As a rule, a cart-horse mare is bought for working purposes, and if warranted sound the element of barrenness is not generally considered. But even on this point two of the veterinary surgeons examined consider that conception and parturition are perfectly possible in the case of this mare. The bargain must be confirmed, and expenses given against the pursuers.—(Intld.) A. R.

THE VALUE OF A "PROFESSOR'S" OPINION ON HALTING AND HOBBLING.

To the Editor of the VETERINARY JOURNAL.

SIR,—Whilst our medical lecturers are busy with their classes, it appears *our* veterinary lecturers are employing themselves in a far different sphere of action ; with what advantage or profit to themselves, the pupils or profession, the following police report, from the *Telegraph* of October 4th, will show :—

"William Bye, a pig-feeder, of 12, Latchmere Grove, Battersea, was summoned by George Smith, Inspector of the Royal Society for the Prevention of Cruelty to Animals, for working a horse while in an unfit state.—Mr. Haynes appeared for the defendant.—There was a conflict in the professional evidence.—Professor Pritchard, who was called on behalf of the Society, gave an opinion that the lameness caused pain, and that the animal ought to be killed.—Mr. Phillips, a veterinary surgeon, who was called for the defendant, stated that there was not any pain. It was a chronic deformity. —Mr. Paget left the bench and requested both the witnesses to accompany him to inspect the horse. When he returned, he said there was no doubt that the horse was lame. It was exactly the same as the case of a man who

happened to meet with an accident by which his leg was shortened, and he had to wear a high boot. If he ran he would limp and hobble. So with the horse—it limped and hobbled, but there was not any pain. It would be monstrous to destroy all the horses which had chronic lameness. He had pulled the horse about and pinched it, but it never flinched, and there was not the slightest inflammation. He dismissed the summons, and ordered the Society to pay £1 11s. 6d. costs."

It is to be hoped this decision of the learned magistrate will prove an antidote to such professional ambition of an unhealthy character. The idea of a learned Professor figuring in a police court at all is lamentable enough, and still more ludicrous when his judgment of a simple case of Chronic Halt in one of his leading subjects is questioned and ignored by a learned and experienced police magistrate, who, after a painstaking personal survey of the animal, decides that the case was no cruelty at all, and marked his feelings by mulcting the Professor's employers in the costs of defendant.

Yours obediently,

"RADIX."

HYDROPHOBIA.—PLEURO-PNEUMONIA.—THE TITLE OF "V.S."

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—You must kindly grant me space for a few remarks as to the letter from "Mr. David Fulton, V.S.," and your "Comments" on same, which appeared in last month's VETERINARY JOURNAL. I don't in the least intend to support Mr. David Fulton in his *outré* opinion as to the non-contagiousness of Hydrophobia; neither can I for a moment wink at the extreme danger (not to speak of the absurdity) attending the evolution of such erroneous ideas. But I do mean to insist that Mr. David Fulton was perfectly justified in assuming the title of V.S., in so far as he studied under the late Professor Dick, graduated at the Edinburgh Veterinary College in 1859, and his name accordingly appears in the Register of Veterinary Surgeons recently published by the Highland Society.

As a matter of course, we Edinburgh College graduates who studied under Professor Dick, are well aware of the extraordinary ideas promulgated by the Professor as to the non-contagious nature of Rabies, Pleuro-pneumonia, and such-like diseases. No wonder, then, that Mr. David Fulton thinks himself justified in publishing opinions backed by such eminent authority as the late Professor Dick!

If I mistake not, another Edinburgh Graduate (1840), and M.R.C.V.S. as well is playing the same "non-contagious" game as regards Pleuro-pneumonia in America (see recent numbers of *Albany Country Gentleman*), and is quoting as corroborative evidence the lately published peregrinations of that "*pathologist of high standing, Mr. R. H. Dyer, M.R.C.V.S., of Limerick*" (the quotation in italics is from the *Albany Country Gentleman* of 11th Sept. last). So we see that Professor Dick, being dead, yet speaketh, and is corroborated by the eminent pathologist above mentioned.

A word in conclusion as to the title of V.S. When I got (what I call) my diploma—or if you will, certificate—from the Highland Society, I was distinctly told that I was legally entitled to the designation of Veterinary Surgeon, and eligible as such in all civil and military capacities in Great Britain and her Colonies. A good many eminent medicals (such as Goodsir, Dycer, Balfour, etc.,) and veterinarians (such as Fleming, Hallen, Senior and Junior, Dollar, Steel, etc.) were present, and heard the late Mr. J. Hall Maxwell tell us that such was the case, and no one said him *Nay!* It is too late now to

come forward and disentitle us, for we will plead "use and wont," and so stick to our *right* to be called Veterinary Surgeons!

I am, faithfully yours,

Banff, *Oct. 8th.* A. E. MACGILLIVRAY.

[We were not aware that Mr. Fulton was a veterinary surgeon, and are therefore all the more sorry that he should have given the sanction of his professional name to the dangerous notions ventilated in his letter. It is surely not too much to expect members of the profession to know something of transmissible diseases, and modern investigations with regard to them. Ignorance of these is fraught with the greatest danger to the public and injury to the profession, as the history of these maladies in this country amply proves. With regard to the designation of "veterinary surgeon," so far as the certificate holders of the Highland Society are concerned, we had no intention of showing the slightest disrespect or discredit towards them in the comments we made. There is no need to say more, nor to discuss this matter further, as an easy way now exists to get rid of the anomalous position in which so many esteemed colleagues find themselves. If those concerned will avail themselves of the opportunity, the *vexata quæstio* will be for ever settled, and a sad hindrance to unity removed.]

AN UNJUST JUDGMENT.

To the Editor of the VETERINARY JOURNAL.

SIR,—The following case, which was an appeal from the decision of the County Court Judge, was tried before Judge Lawson in Limerick, at the Summer Assizes of 1879.

The appellant, Michael Coffey, opposed a decree obtained against him by the respondent, Patrick Keough.

The decree was for £15 for breach of warranty in the sale of a horse. On the hearing of the case before Judge Lawson, the respondent proved he purchased the horse for £13, and it was guaranteed "to work quiet and to be all right." He, the respondent, drove the horse on the day of purchase and it went well; but next day, according to respondent's evidence, it was lame, and eventually had to be destroyed. Five farrier-sergeants of the 19th Hussars stated they made a *post-mortem* examination of the horse about a month after sale, and found his humerus was broken, and that in their opinion the fracture was of old standing and must have existed before respondent purchased. On cross-examination they stated the horse might have been driven eleven miles, with four persons in the carriage, on the day of purchase without the respondent noticing him lame, admitting he had received a *compound fracture* of the humerus three weeks previously.

Mr. Sheahan was a witness for appellant, and proved he was present at the sale of the horse, and the only engagement *asked* or *given* was that he would "go quiet in harness and be all right." On the mid-day following the sale Sheahan met the respondent and asked him how he liked his bargain, and he, the respondent, said he liked the horse very well, and that he had him out driving the day before—*i.e.*, the day of sale—with four persons on his car, and the horse went so well that one of the party asked him not to drive so fast. On the same evening Keough asked Sheahan to come and he would show him the horse. Sheahan stated in court that the horse was standing on paving-stones when he saw him, and he remarked to Keough that the horse was badly treated. Keough said he could not help it as he had taken too much drink the night before and was not able to attend to the horse.

Mr. Hourigan proved that he drove the horse *forty miles* with *three persons* on his car within three weeks of sale. I was examined as veterinary surgeon

on behalf of appellant before Judge Lawson, and I stated that a horse receiving a *compound fracture* of his *humerus* could not recover within three weeks sufficiently to carry four persons in a carriage eleven miles without showing symptoms of pain—*i.e.*, lameness. I may mention that one of the sergeants stated before the Judge that he frequently saw horses receive a *compound fracture* of the humerus and work within three weeks afterwards. Judge Lawson confirmed the decision of the County Court Judge.

Hoping the foregoing will be considered as deserving a place in the next issue of your valuable Journal,

I am, sir, yours faithfully,

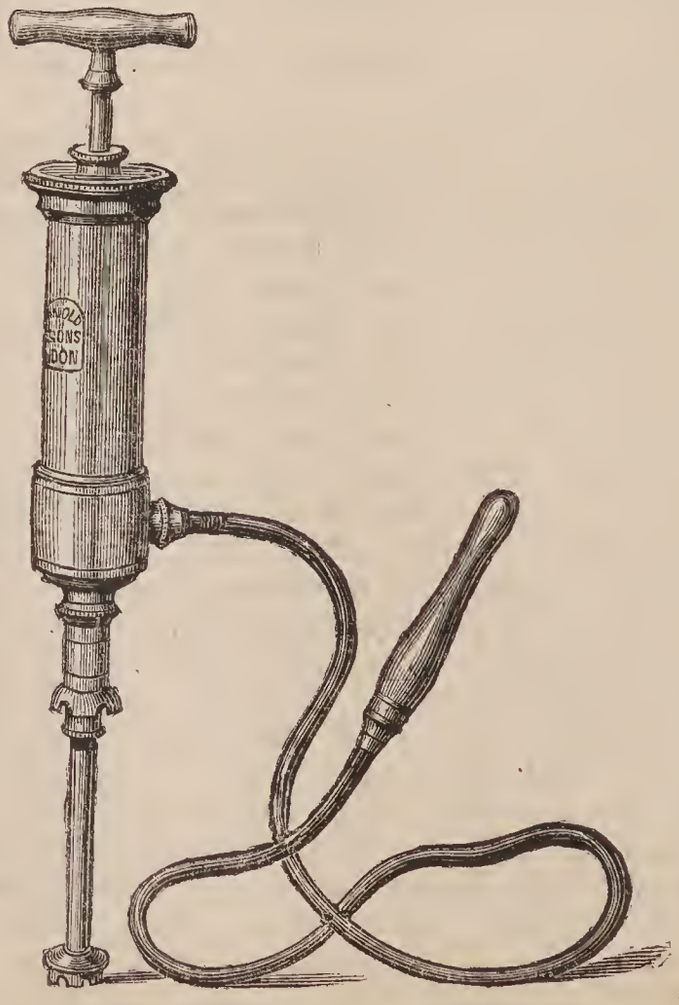
Limerick, *October 13th.* JOHN O'RIORDAN, V.S.

[A more unjustifiable decision was never given in any case, and we are perfectly astonished that any judge could believe such statements as those given by the farrier-sergeants. We would advise the appellant to have the case moved to a higher court, where he would receive a verdict in accordance with proper and reliable evidence—not that of men who knew nothing of what they pretended to do.]

A NEW ENEMA PUMP.

To the Editor of the VETERINARY JOURNAL.

SIR,—Messrs. Arnold, of West Smithfield, have made for me a very compact and handy little enema pump, and thinking it may prove a great boon to some of my professional brethren in the country who ride, I take



the present opportunity of drawing their attention to it. It is easily carried in the coat-pocket, the flexible pipe being carried over the shoulder under the coat or vest (where, by-the-by, one should always carry the male catheter).

Instead of using a stable pail I get a man to hold a hand-bowl or jug, which is much more handy. Many of my best clients, knowing my objection to carry my old-fashioned and cumbersome instrument when riding, used to ask me whether I had brought my piano to-day? The present instrument bears about the same comparison to the old one, as a revolver pistol does to an old blunderbuss. One can fill the gut in a few minutes with the new instrument, and I have always found in cases of stoppage that the lower bowel is more irritable, and retains an enema slowly injected (and the gut only half or three-fourths full) much better than when thrown in quickly. The last, but not least, of its virtues is its cost, which is only about two guineas. It might be greatly improved in appearance by being well plated. Please accept my apology for trespassing so far on your valuable space,

I have the honour to be, sir,

Yours faithfully,

Enfield, *October* 15*th*. D. WINTON, V.S.

THE PUFFING OF VETERINARY SURGEONS.

To the Editor of the VETERINARY JOURNAL.

SIR,—The following paragraph from the *Freeman's Journal* of September 2nd, appears as a specimen of what friends may do to place veterinary surgeons in a very undignified position before their professional brethren. Doubtless the competition incidental to civilian life may afford some palliation for the objectionable practice; but in Her Majesty's Service, where this source of friction is to a great extent removed, it is not easy to see the object of such paragraphs as the one subjoined:—

Experiments have been instituted at Aldershot to decide as to the superiority of the new French forage biscuits, or of those brought out by Major —— and Mr. ——, the popular "vet." of the — Hussars. Mr. —— has two brothers in the service, one in the — Hussars, and the other in the ——. All are very clever Irishmen and capital judges of horses, and how to breed, train, treat, and ride them. Mr. —— some years ago invented a safe and handy system of picketing cavalry, which was adopted by Colonel —— for the — Hussars.

To say the least of such notices, they are not, I think, calculated to raise in any way the status of those whom they are meant to serve, and no better advice can be given than that tendered by the editor of the *Lancet* in a recent issue, and who, under somewhat similar circumstances, recommends that the objects of such notices should call upon the editor of the offending paper to divulge the author of a paragraph so contrary to all good taste, and then treat him as they would an enemy that had libelled them.

I beg to remain, yours truly, "D."

COMMENTS.

IN his report to the Court of Quarter Sessions, the Chief Constable of Lancashire expresses regret that, as the law at present stands, magisterial orders for the suppression of the dog nuisance can only be made after cases of Rabies have actually appeared. He adds his belief that if magistrates could make restrictive orders at their discretion, it would be a relief to the public mind. We fear there is not much likelihood of any common sense measures being adopted with regard to this terrifying and terrible scourge, which claims its victims almost weekly in the North of England. The simplest efficient precautions are neglected by both the magistracy and the Government, and the measures enforced, when too late, are of no avail.

FROM a consideration of nine cases of tuberculosis in infants from ten weeks to ten months of age, including seven fatal cases with necropsies, Dr. Epstein, in the *Prager Vierteljahrschrift* (Band 142), concludes that the presence of the disease in infants is in most cases due to infection with the milk of a tuberculous mother, and not to hereditary predisposition, as is usually supposed. Two of the children were the offspring of healthy mothers, but one was suckled by a phthisical wet-nurse. Seven were the children of phthisical mothers. In one of the cases there were intestinal ulcers and cheesy infiltration of the mesenteric glands. The author remarks that the Tuberculosis of infants and young children differs from that of adults in the great frequency with which the lymphatic glands, and especially the glands of the small intestine, are affected, and also in the comparative rarity of pulmonary disease in children. These facts appear to indicate that the starting-points of Tuberculosis in children and in adults are different; and that, while in adults and older children it is breathed in, it is sucked in by infants and young children. Epstein's facts and suppositions are in entire conformity with what we have pointed out so frequently for many years, as to the dangers attending the consumption of milk from tuberculous cows. Though his conclusions have been in this way anticipated, yet the evidence he gives is valuable to the pathologist and sanitarian, no less than to the veterinary surgeon. Neither infants nor young animals should be suckled by tuberculous nurses, nor yet fed with their milk.

ANSWERS TO CORRESPONDENTS.

J. DICKIE, AYR.—We purpose soon to publish a paper on veterinary thermometry. In the meantime apply for Armatage's pamphlet on the thermometer, to be had from Mr. Kimpton, Bookseller, High Holborn, London.

J. C. FLANDERS, DUFFIELD.—We are sorry we cannot inform you of the address of Mr. Adsetts, M.R.C.V.S., but probably some one seeing this query may communicate the fact that you are desirous of furnishing him with important news.

TO INQUIRERS.—With regard to the movement—*the Profession versus the Royal Veterinary College*—we understand the Hon. Sec., Mr. T. Moore, 11, Upper Berkeley Street, W., has disbursed the expenses so far, and that the probable total expense will amount to £20, of which £3 15s. has been contributed. Any further sums should be sent to him.

ERRATA.

IN the last issue of the Journal, on pp. 276, 278 and 282, for the sign ʒ substitute ʒ.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from A. E. Queripel, Royal Artillery, Punjab; J. J. Meyrick, Royal Artillery, Punjab; G. A. Oliphant, Royal Artillery, Hapur, India; "D"; J. Ritchie, Kincaldrum, Forfarshire; Captain Hayes, Meerut; "Cyclop"; A. L. Butters, Sunderland; J. Dickie, Ayr; "Radix"; A. E. Macgillivray, Banff; R. Poyser, The Caribiniers, India; J. McFadyean; J. O'Riordan, Limerick; G. Carless, Worcester; Professor Walley, Edinburgh; H. H. Milward, Long Sutton; R. B. Prentice, Longford, Ireland.

BOOKS AND PAMPHLETS: Bulletin de la Société Centrale de Méd. Vétérinaire; Annual Announcement of the Montreal Veterinary College; *W. Russell*, Scientific Horse-Shoeing; *W. Haase*, Die Influenza der Pferde; *W. Williams*, Principles and Practice of Veterinary Medicine; *Longhi ed Tirinanzi*, Dizionario, etc., delle Scienze Mediche e Veterinarie.

JOURNALS, ETC.: *Der Thierarzt; Revue Vétérinaire; Recueil de Méd. Vétérinaire; Annuales de Méd. Vétérinaire; Wochenschrift für Thierheilkunde; L'Echo Vétérinaire; Farmer; Mark Lane Express; Lancet; Live Stock Journal; Der Thierfreunde; Deutsche Zeitschrift für Thiermedicin; The College Quarterly; Archives Vétérinaire; Army and Navy Gazette; American Veterinary Review; Medical Press; Agricultural Gazette; Gardener's Magazine.*

NEWSPAPERS: *Irish Times; New York Spirit of the Times* (two copies); *Freeman's Journal; Scotsman; New York Herald; Northern Evening Mail.*

THE VETERINARY JOURNAL

AND

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DECEMBER, 1879.

PHLEBITIS OF THE METATARSAL VEIN—THROMBOSIS—DEATH.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

ON June 10th a very well-bred, high-actioned and impetuous chesnut mare, aged, was driven in a drag from Windsor to Ascot and back, and on both journeys was much excited and unsteady. On the previous day she had travelled to Windsor from London, where she had been standing idle for several months, immoderately fed and insufficiently exercised. On the evening of the Ascot journey she exhibited nothing amiss, but the following morning she was lame in the left hind leg. She stood on the toe of the foot, and the heel was with difficulty put to the ground. The fetlock joint was swollen, and this swelling was greatest on the inner side, above the sesamoid bone, where, in the situation of the internal branch of the suspensory ligament, it was hard, and extremely painful on manipulation. The lameness appeared, in fact, to be due to sprain of this portion of the ligament, and the usual treatment was recommended—viz., rest, placing a high-heeled shoe upon the foot, and continuous irrigation of the fetlock with cold water. Unfortunately, as it afterwards proved, at the desire of the owner of the mare, warm fomentations were substituted for the cold water.

On the 12th the lameness was most marked, and the foot was frequently raised from the ground. The leg was more swollen around the fetlock, and the tumefaction had extended towards

the hock, while the pain had greatly increased. A strong purgative dose was administered. On the 13th the leg was still more tumefied, the œdema having nearly reached the hock and it had descended quite to the hoof; it was pretty uniform, though densest and most prominent and sensitive on the inner aspect of the leg, particularly along the course of the metatarsal vein. The pulse was increased in frequency and hard, and the nostrils dilated; there was much uneasiness and other indications of suffering. A fracture of the first phalanx was now suspected, but a most careful examination could detect nothing of the kind. On the morning of the 14th the mare was found lying in her stall and struggling very much; indeed, she appeared to have been down during nearly the whole night, as she was very severely rubbed and contused on the head and those salient parts of the body in contact with the floor. The leg was immensely swollen from the hoof to some distance above the hock, the swelling being hard and hot, and where the skin was destitute of pigment in the pastern, it showed various tints, from light red to deep purple. There was also an exudation of reddish-coloured serum on the surface of the skin in the region of the fetlock and pastern.

There were none of the characteristic symptoms of Lymphangitis, though the animal exhibited as much suffering as is witnessed in a most acute attack of that disease. With great difficulty she was removed to a hospital box and placed in slings, and another examination made in order to ascertain the existence of fracture, the appearances being very similar to those present when fracture of the first phalanx implicates the fetlock joint. The examination was extremely difficult, because of the excruciating pain and dense swelling, and it only yielded negative results. The animal's countenance testified to the intense agony she endured; the foot could not be placed on the ground, and the limb was in a state of continual flexion and extension. The case looked extremely serious, and I was puzzled to know what the symptoms could be attributed to, if not to fracture. Some years ago, while I was at Chatham, an officer's horse presented analogous symptoms after having had a splinter of wood driven through the frog into the interior of the foot. After death, which occurred in three or four days after the injury was inflicted, the

navicular bone was found split across its short axis. The specimen is now in the museum of the Royal College of Veterinary Surgeons.

The mare received large doses of anodyne medicines, and the limb being enveloped in blankets, cold water was now applied copiously and continuously during the day and night by means of tubing carried from the water-tap.

On the 15th all the symptoms were aggravated. The swelling was immense, and reached above the stifle nearly to the body. In the region of the hock, and down the outside of the leg, there was an exudation of blood and reddish-yellow glutinous fluid hanging in beads and long shreds to the hair. Inside the leg were a number of large bullæ containing an ichorous fluid, and where the swelling had been first noticed—towards the inner bifurcation of the suspensory ligament, as well as below the fetlock on the same side, sloughing of the skin and subcutaneous tissues had taken place. The foot, as well as all the limb nearly to the stifle, was low in temperature, nearly destitute of sensation, and separation of the hoof from its coronary attachment was commencing. Sphacelus of the limb was evidently rapidly progressing, and from the general condition of the animal it was obvious that a fatal termination could not be far off.

On the following morning early—the 16th—to the surprise of the farrier-major the mare appeared to be greatly relieved, as she was standing upon the limb and eating some grass, and he imagined she was about to recover. In two hours she suddenly dropped in the slings, and was dead.

Unfortunately, from an idea that all the grave disturbance was due to a fracture present at the lower extremity of the limb, only the leg from a short distance above the hock was preserved for examination. The skin presented the appearances above described, from the hoof to the point of section. The wounds on the inner side of the fetlock and pastern were in a sloughing ichorous condition, and on removal of the skin, which was much thickened from infiltration, there was found diffuse and extreme inflammation of the subcutaneous connective tissue, with extravasations and infiltrations of blood to such an extent that various parts appeared quite black. There was intense hyperæmia of all

the other tissues—bone, tendon, ligament, and muscles—the metatarsal bone, indeed, was red and black-red throughout. In various places, and especially in the vicinity of the articulations, there were foci of commencing suppuration. The internal metatarsal vein, from immediately below the hock to near the hoof, was greatly distended by a thrombus, which was firmer, and more uniform and lighter-coloured in the region of the fetlock than higher up or lower down, where it was nevertheless denser and more coherent than ordinary jelly. The paler and firmer portion was about six inches in length, and at one part, where sloughing had commenced in the adjoining tissues, and the vessel was surrounded by pus and fibrinous detritus, the thrombus was soft and crumbling, as if about to become purulent. The walls of all the large veins were thickened and inflamed, and they, and even the very smallest veins, were blocked with coagulated or semi-coagulated blood. The arteries were remarkably free from pathological alteration, and the external metatarsal vein contained only black jelly-like blood.

I regretted very much that I could only make an examination of this portion of the animal. In all probability important lesions would have been discovered in other, and perhaps very distant regions of the body, which would account more satisfactorily for death.

Whether this was due to exhaustion from the intense pain, blood-infection from the decomposing coagula in the veins of the limb, or to embolism of the heart, lungs, brain, or other important organ, could not be ascertained ; though I am inclined to think the first-named cause was chiefly concerned in bringing about a fatal termination.

An important question arises as to whether the Phlebitis and Thrombosis were primary or secondary in this case—whether the vein was primarily injured and inflamed, or whether the inflammation had spread to it from other tissues in the neighbourhood of the vessel ? I am inclined to believe that the latter was injured, possibly by a blow from the opposite foot, as the pain and swelling discovered on the morning after the journey to Ascot were in the situation of the metatarsal vein. I am aware that the formation may occur in veins without Phlebitis

being present, and this may be much more frequent than is commonly supposed—being due to debility or paralysing influence of the sympathetic and vaso-motor nerves, which again might be consequent on over-exertion and excitement. But in this instance there was evidence of local injury, and the rapidity with which the inflammation and blocking of the veins took place from this part throughout the limb, as manifested by the great and extremely painful tumefaction, extending from the hoof to above the stifle, was in all likelihood, partly, or even entirely owing to the condition of the animal at the time of injury. What, in other circumstances, might have proved to be a trifling contusion which, with appropriate treatment, would have been recovered from in a few days, became a most serious pathological condition. From high feeding and insufficient exercise, the blood undoubtedly contained an excess of fibrogenous material, which would act as a predisposing cause; and a very slight injury to such a large vessel as the metatarsal vein, sufficient to set up a trifling degree of inflammation and irregularity in the inner coat or some little defect in a valve, would lead to rapid deposition of fibrin there, obstruction, and coagulation of the blood, with quick extension of the inflammatory and thrombic process to the other veins of the limb by continuity. It is easy to understand how the great œdema and tenseness of the leg should be so rapidly developed, when we consider that the arteries were patent all the while, and conveying blood into the limb, but the veins were at the same time more or less obstructed, and therefore quite incapable of carrying away the blood again. The increased circulation in the arteries and obstructive inflammation in the veins would be intensified by the fomentations with warm warm—treatment for which I was not responsible.

Since this case occurred, and while at Aldershot in July, I had a similar one in a troop horse, which had slight Elephantiasis of the left hind leg for some time. Soon after returning from a severe field-day, the limb became greatly increased in size and painful in the extreme, while the femoral and tibial arteries throbbed violently. The horse lay down, and appeared to be suffering excruciating pain. A copious abstraction of

blood was made from the inferior circumflex artery of the foot, a strong cathartic and sedative dose of medicine was administered, and the entire limb was subjected to continuous cold-water irrigation. The following day the symptoms were more favourable, but there was great tension in the lower part of the leg. This was relieved by rather deep scarifications. For two or three days there was threatened formation of abscess, both inside and outside, where the tension had been greatest; but this disappeared, and the animal was able to take gentle exercise soon after. Had the same treatment been adopted in the other case, a different termination might have resulted.

With regard to the origin of the attack in the troop horse, this might be accounted for by defective circulation in the limb, due to the hypertrophy and induration of the skin and subcutaneous connective tissue. This would retard the flow of blood, particularly through the veins, while the horse was undergoing severe exertion, and this retardation would have a tendency to the formation of thrombi. Hindrance to the flow of blood in a living vessel is one of the two prime factors in the production of coagulation.

GLANDERS AND OZŒNA, FARCY AND PYÆMIA.

BY ROBERT WARD, F.R.C.V.S., LONDON.

(Continued from page 238.)

HAVING dwelt on the importance of a correct *diagnosis*, I will now select and describe a few interesting cases from my note-book.

In 1857 I was requested by Drs. P. and C. to call and examine a valuable brown blood cob used by them in their practice for some years, which they said had for the last year or so had an unpleasant discharge from its near nostril, and was *jugged*, as it was termed, on same side. They had the opinion of two practitioners, one said it was Glanders, the other, Nasal Gleet. It had been under treatment, but no permanent improvement resulted.

The following morning I went and examined the cob, which was in a box by itself in the orchard, where it had been some months. The cob appeared healthy, in good condition, although

the coat appeared rather thrifty, the appetite was good. I was cautioned to exercise care on approaching the animal as he was very *handy* with his fore feet, and objected to have his head touched. On manipulation I found the sub-maxillary glands hard and adhesive, the edges of nostril covered with unhealthy pus, of a gluey nature, the Schneiderian membrane injected, of a coppery colour, with soreness around the false nostrils, and considerable fœtor from the animal's breath whilst making examination. I next proceeded to *immediate* auscultation, and found the respiratory murmur—evidence the lungs were sound so far as auscultation could detect; this led me to make a more careful examination of the animal's head, so, having the cob brought to the door, I placed my hand over the upper part of the nasal bones, and was about to percuss the sinuses, when the animal showed fight, and having a firm hold, my thumb pressed over the region of the supero-maxillary sinuse, when I felt a crepitant sound given to my thumb; this led me at once to diagnose the case as one of dental origin. There was nothing outwardly to be observed, both sides appeared alike. I had considerable trouble to complete my examination, for my patient was a rebel; however, I found the fifth molar was the cause of all the mischief, and reported the result to the medical gentlemen, who were rather surprised. Having explained the nature of the case, it was decided that the cob should be prepared, and operated upon under chloroform.

Upon my next visit the animal was cast after some difficulty, the anæsthetic exhibited, the supero-maxillary sinus opened with the trephine, and the fifth molar *punched* out most successfully—not extracted, as it might be now, for at that time the Gowing, Thompson, and other valuable dental instruments had not been introduced. The cavity contained *debris* of hay, oats, etc. The parts being well cleansed and dressed with a solut. ferri. perchlor. a plug of gutta-percha was fixed in the cavity, incision brought together, and cob liberated. Advice was given as to keeping parts clean, etc., which was, of course, well understood, mineral tonic prescribed, ung. ioda c. hydr. applied to sub-max. gland, and in a few months the animal was quite well. It resumed work soon afterwards, being ridden by Mr. C., the partner, almost daily.

Now the principal difficulty in this case was approaching the patient to make a careful diagnosis, for he was a perfect rebel or brute to handle. It, however, shows us we must at all hazards devise means for doing so.

In 1861 I was requested by the chairman of a large bus company to report on the condition of two horses. One, a black, I found labouring under primary symptoms of Acute Glanders. This animal was isolated for a few days, then unmistakable evidence of Glanders and Farcy developed, and it was destroyed. The other one I found labouring under Chronic Glanders; this was a new purchase. There was at the time of my examination the characteristic gluey, sizey-like adhesive discharge, and in this instance, on both nostrils, but it was not large; there was on the near side a small hard knot, or jug, as horsemen term it, or, as we should say, an indurate condition of the sub-maxillary gland, but this was not adhesive to the bone, but slightly loose; the Schneiderian membrane was but slightly altered as far as the eye could penetrate, but still the appearance was not healthy, and high up of a slight leaden hue—no evidence of ulceration could be detected. The general appearance of the animal would not strike any one that the animal was so diseased. On immediate auscultation, corroborated by *mediate* auscultation, gave evidence that the lungs were tuberculated and in a condition of *vomice.*

The manager would not believe in the animal's condition, and had, he said, the opinion of a good authority the animal was not so diseased. The animal was sent off to the horse-slaughterer's at my earnest request, and the result proved the correctness of the diagnosis in the presence of several of the board of directors and three brother practitioners.

I have selected these two cases from many others with a view of delineating the advantages of sound clinical study and auscultation in such cases, for in the medical profession auscultation is held of the highest importance, and leads the medical practitioner to diagnose pulmonary and other affections to a degree. Professor Williams, in his "Principles and Practice of Veterinary Medicine," alluding to auscultation, says tersely: "To become familiar with the knowledge to be acquired by auscultation, much

time and labour must be devoted to it, first on *healthy*, and afterwards on *unhealthy* animals; in fact, the ear must be trained by long experience."

Again, the same author says, in alluding to the difficulties attending the operation on our patients: "Notwithstanding all these drawbacks, auscultation is of immense advantage, and by it we are enabled to arrive at conclusions that would otherwise be impossible."

The late Professor Varnell, in the *Veterinarian* of 1867, gave the profession an excellent retrospect of his practice and knowledge of those diseased conditions of the sinuses of the head giving rise to symptoms resembling Glanders, to which the student might refer with profit.

(To be continued.)

"BURSATTEE."

BY F. SMITH, M.R.C.V.S., ROYAL HORSE ARTILLERY, WOOLWICH.

(Continued from page 307.)

THE second class of blood diseases is characterized by superabundance or deficiency of some normal constituent of the blood. Some have reasoned from analogy with the occurrence of boils in man, which is attributed to the excess of acidity in the blood, that the same occurs in Bursattee. We know of no analysis of the blood of a patient suffering from Bursattee; we are not aware of any case in which even the reaction of such blood has been tested, and even if we know the blood is acid, we are not aware of how this suffices to explain the disease! Such observers consider that the lesions are natural means of removing the excess of acidity, but this is hardly in accordance with the fact that some animals are perfectly covered with Bursattee sores of long standing. And there must be some limit to the amount of acid in the system of such unfortunate patients. Also in affections of this class, Exanthemata, excess of material in the blood is accompanied by more or less febrile disturbance in the early stages, and such has not yet been traced in Bursattee. Others attribute it, not to excess, but to deficiency of the

usual elements of the blood—to imperfect nutrition, in fact; but why should this act locally on tissues requiring so little nutrition as the fibrous structures,while muscle, nerve, and other high tissues remain so well nourished that an animal may even be in good condition, so that we are told to "put our patients into training" by one of the ablest Indian practitioners of his day. Thus we have dealt with all suggested constitutional sources and have found none of them satisfactory. We may also draw attention to the following points in this connection: The hereditary transmission of the disease is doubtful, though at studs and breeding establishments this point might be elucidated; *post-mortem* examination of viscera must be performed with care, the condition of lymphatic glands and ducts being especially noted; the constitutional symptoms should be sought for and carefully noted; and surrounding conditions must be carefully recorded. It has seemed to us that "Walers" are more frequently affected than country-bred horses, but we are by no means assured on this point. Lastly, with regard to the recurrence of this affection, this seems to point to a constitutional origin, but by no means is conclusive, for we know that newly-formed tissues are liable to undergo disintegration, as we have already found described by Mr. Hurford (*vide supra*); but we have here something superadded—recurrence *only at a fixed season of the year*, and not only may a Bursattee sore itself reappear in its original position, but also fresh sores may occur in different parts of the body with a change of season. We are not prepared to say that external influences, such as weather, can excite newly-formed tissues to disintegrate; the new sores may be quite independent in their origination and progress. We must consider this recurrence later on.

That this disease is purely local, being the natural course which an ordinary wound pursues in a constitution the tissues of which are deficient in tone in consequence of long-continued high temperature, we can by no means endorse; for if such were the case, why should not ordinary wounds in other countries assume similar features in animals during exceptionally warm seasons, and whenever the system is deprived of tone? The specific nature of the products, too, is opposed to this view.

The nodules have been supposed to be ova of animal parasites, but microscopical examination at once sets the question at rest; for we cannot trace any of the processes of yelk segmentation in them, nor should we expect to find white fibres enclosing brown cells surrounded by a capsule in an ovum. But another theory of parasitic origin of the affection demands more careful examination. In the tumours we find two forms of characteristic elements—the fibres and the cells. The fibres are at first large, they shortly present the cells inside them, they break up longitudinally, and by their rupture allow the cells to escape. The latter at first are large, with several nuclei; later on we see only smaller cells, each with a single nucleus; this may be due to multiplication of the larger cells by fission, though this has not been looked for, and therefore, even if observed, would have been less likely to receive notice.* Lastly, the cells are acted upon by liquor potassæ in a very significant manner, for it removes the colouring matter as it does that of *vegetable* cells. The above processes of development of the fibres and cells remind us of the changes occurring in some of the lowest vegetable forms, especially the bursting of large fibre-like parent bodies, which allows spores to escape in certain low fungi.

The effects of glycerine may be here noted. If a thin section of a Bursattee tumour be placed under the microscope, when it is treated with glycerine it loses all trace of structure and becomes a gelatinous mass almost immediately; this can only be caused by absorption of glycerine by the fibres, which, swelling, shut the cells out from view. It will be remembered that we noted in the larger fibres transparency of the axis. These facts lead us to surmise that the fibres, large and small, are hollow cylinders, and in that respect resemble the hyphal tubes of fungi. A section of a Bursattee tumour was placed in glycerine, it became gelatinous; after three days the surface of the section had on it an extremely

* We must here recall to our minds the presence in the tumours of the peculiar brown epithelioid cells which we noted as varying in the different depths of the tumour. We noted that those in the deep part have the colouring matter confined to the nuclei, while those in the upper part have the colouring matter diffused throughout them. This looks remarkably like fission observed in cells. We might even consider these large cells as a special life-phase of the organism—a better development of the small round cells.

fine brown pellicle. This when placed underneath the $\frac{1}{4}$-inch objective presented the appearances shown in the annexed figures. It consisted of brownish cells about the size of ordinary tesselated epithelial cells, some quadrangular, others pentagonal, others oval in figure. These were of a brownish or amber-brown colour, the external part of the cells containing most colouring matter (though this appearance may be due to overlapping of their margins). With them was a quantity of granular matter. These may be plainly seen in Fig. 1; but Fig. 2 exhibits a peculiar

fig: 1.

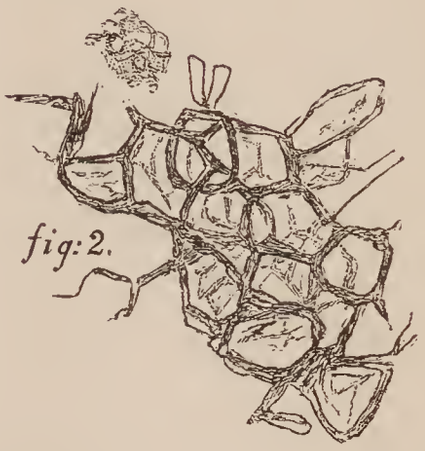

fig: 2.

appearance of the same specimen, where the amber-brown lines in their distribution and variations in size seem to us strikingly like the mycelium of a fungus.

The Bursattee nodules might be considered encysted phases of the life of the parasite, means by which spores are removed from the system in a protected condition for distribution over the surface of the ground, there to undergo certain processes of development and change before re-introduction into the animal system. Artificial cultivation seems to us a desirable line of future investigation.

Thus many conditions of the tumour tend to support the theory of parasitic origin of Bursattee. We may review some of the general conditions as noted above, and see if they can be reconciled with this view. In the first place, the periodical recurrence of the outbreak of the affection is not opposed; the regularity of this is comparable with that of attacks of Recurrent Fever, now traced to the influence of a vegetable parasite of the nature of a bacterium. It may well be that the influence of the prolonged external heat on the tissues reduces their power of resistance to this vegetable organism, which for a time gains un-

controlled power, which it maintains to the prejudice of the tissues, until the system regains tone and temporary dominion.

Nor must the fact that the disease originates in the white fibrous subcutaneous tissue be considered as militating against our theory. Vegetable germs are not so large but that they may readily penetrate the pores of the skin and pass down into the hair-follicles or sudoriparous glands, whence for them the way is easy into the adjacent areolar structure. The advent of the rainy season especially would seem to call these organisms into activity, presenting them with conditions favourable for development; cells scattered about from the Bursattee nodules would be washed to the tanks, and the germs set free would then be most liable to penetrate the system of the hosts, and would especially enter those parts most exposed to moisture, the extremities of the limbs and the lips, or those parts about which moisture may be longest retained, as the prepuce and the penis.

Thus theory does not prove adverse to that explanation of our observations which we have adopted. On every hand it gives it support.

The next point which demands from us attention is the comparative pathology of the disease, and here we have especially to examine its relations to the affection known as "Delhi Boil." We may refer for an account of this to the "Appendix to the Army Medical Report for 1869," which comprises a paper by Dr. J. Fleming, Staff-Assistant Surgeon; also to Sir J. Fayrer's paper in the *Practitioner* for October, 1875. The latter article is very short and precise, the former, as being illustrated by well-executed figures, and being somewhat elaborate, will prove the most satisfactory source of information. From it we learn that the first appearance of the disease resembles a mosquito bite with the skin slightly elevated; from this small red spot a number of blood-vessels radiate, it becomes swollen without pain, throws off its epithelium, and becomes smooth and flat on its surface, shining and transparent. The growth slowly enlarges, and spreads from the centre by little ridges of smooth skin, pits on pressure, with a stinging sensation. Becomes itchy, soft, and vascular, with a peculiar brownish appearance, and the hairs fall off, leaving the roots and parts of the shafts. The tumour is

softest on the top, and here ulceration commences. The material of which the growth is composed attains its maturity at its upper part, and no injury seems necessary to originate the ulceration. Little yellow bodies exist in the tumours; "when subjected to chemical reagents they are found to consist of an outer coating of epithelial cells like those of the skin, arranged so as to give the impression of a fibrous envelope, but easily separated by a weak solution of liquor potassæ. The interior of some contains a semi-fluid, whitish-looking substance, made up of amorphous granular matter; of others, a fine hair or a portion of one." A peculiar cell-growth replaces the normal skin-structures; the fibrous tissues of the skin, yellow and white, alone resist its invasion; a transverse section presents fibrous tissue forming a matrix for masses of cells, enclosing them in groups the same as in an ordinary fibrous tumour. "The cells are oval or spherical, of a yellowish-brown colour, the cell-wall easily destroyed by pressure, and they mostly contain two or more nuclei. In others no nuclei can be detected, but merely an indistinct cell-wall resembling the sporules of a fungus. Acetic acid renders the cell-wall and nuclei clear, liquor potassæ dissolves it, leaving the nuclei as little globules, some of a reddish colour, which are insoluble in ether. No mycelium or distinct traces of fungi were detected in any section of these tumours, excepting little globules, some of a light-red colour, which resisted the action of ordinary reagents, and whose nature is uncertain." "The brown, apparently cellular substance may be considered the actual exciting cause of the disease, and by means of which it invades the healthy structures of the skin, producing changes which ultimately terminate in its own degeneration into pus." After reading the above account we are struck with, in the first place, the similarity of the specific elements of the diseases. In each case this element consists of rounded cells of a remarkable brown colour; in size, shape, and position these agree, and further examination of the Delhi Boil organisms may serve to disclose many of those phases of development which we claim to have observed in those of Bursattee. The structure of the tumour in each case is the same, and in both we find nodules—Fleming's "little yellow bodies"; in reference to the minute structure of

these some differences may be mentioned. We cannot coincide with the opinion of Fleming that they result from change of hair-bulbs, for in no case have we found them in connection with hairs ; they occur in all parts of the tumour, and continue to develop in parts where all trace of hair-follicles has been removed by the diseased process. No mention is made of processes radiating from the Delhi Boil nodules, but we believe such might be found on further examination.

With such similarities in the two diseases, we have no hesitation in terming them manifestations of the same pathological conditions, and we have directed our investigations towards a proof of the absolute *unity* of the affections. We experimented as follows :— 1. Ten syces (native grooms) inoculated on the arm with cells and pus from a Bursattee sore in the ulcerative stage. Each man was kept standing in the sun, until the matter placed on the exposed surface of the dermis dried. Negative result in each case. 2. A salootree (native farrier) was similarly inoculated, and on the third day, feeling some tingling about the wound, not willing to become a martyr to science, he surreptitiously cauterized the place and spoilt the experiment. 3. Before the men above-mentioned would submit to the operation, I inoculated myself in their sight, and several times repeated the experiment ; in each case with negative result. 4. Inoculated a dog with Bursattee matter on the nose and ears, with negative result.

Thus of the experiments performed, by far the majority proved negative. But we might have expected this, for the chances in such trials are numerous against success, there being so many conditions of the subject and of the inoculation material essential to the free transmission of pathophytes from animals of one species to those of another. So experiment 2 is of much interest and should encourage us to pursue this line of inquiry, especially as the Delhi Boil is said to be communicable from man to the dog, and Dr. Fleming has proved that it is communicable from man to man by inoculation of himself. It is not essential to the *analogy* of the affections that they be intercommunicable ; for, as is the case with certain known parasitic vegetable organisms, as forms of Tinea, each species of animal may have its own form of parasite, not, in many cases, transmissible to other

hosts. We have noted many differences between the organisms seen by Fleming in "Delhi Boil," and those seen by us in Bursattee; of these many might be attributed to the difference in the soil in which the plant is growing, but some *may* be due to inherent differences in the characters of the species.

The symptoms of the diseases differ somewhat, but not more than we might *a priori* expect. And many of those, which we have learned as above, from Dr. Fleming, may be explained by the differences between the integument of man and that of the horse—the thicker and pigmented condition of the epidermis, as well as the abundance of hairs, serving to conceal some of the earliest stages in the latter animal. Mr. Spooner Hart, in his able papers on this subject, in the *Veterinarian* for 1872 and 1873 (which have now for the first time come under our notice), discusses this question, and arrives at a different conclusion from ours; but we are not prepared to accept his reasoning, especially as several points of Delhi Ulcer, from which he draws his inferences, differ essentially from those mentioned by Dr. Fleming.

Causes of this disease at present are debated. "Max" (in VETERINARY JOURNAL, 1876, i.), attributes a great deal of importance to flies as active propagators, and this view is very tenable; however, it hardly accords with the results of four experiments, as follows:—Bursattee matter was placed on the surface of a wound caused by accident, and of a few days' standing, in four cases, but in neither did the wound assume a Bursattic character.

We must not consider these sufficient to base any conclusions upon. It is a well-known fact that, during the rains a simple wound may assume a Bursattic character. The occurrence of the disease, especially during the rains, led us to examine the water from the wells whence the supply for the men and horses was procured, with considerable care; and we did this the more minutely since human practitioners suspect this of being the cause of the "Delhi Boil." The result of this examination was as follows:—

Microscopical examination of well-water from R. A. Lines, Lucknow, N. W. Provinces.—Clear, but containing very minute particles just visible to the naked eye. Under 1-inch power: was found

to contain fungi, epithelioid cells, animal organisms, fibres, pigment granules (black and yellow). Under $\frac{1}{4}$-inch objective: *fungi* were numerous, and had a great tendency to increase in size, and combine together in masses. The masses varied much in form, but the elements composing them seemed to be strung together, and resembled a half-open fan with a very long handle, with bright centre and dark outline. Around these the epithelioid bodies collected, and the living organisms, monads, etc., worked their way in and out of the mass in an extremely active manner, most of them being rounded, ciliated bodies (Infusorians). The *epithelioid cells* were principally *of a bright yellow colour, with nuclei and nucleoli, the largest containing other cells, some of which were elongated and nucleated. Others were perfectly colourless, had a double contour, and strongly refracted light.* Some of the smaller, non-refractive cells possessed an elongated nucleus. *Some peculiar elongated bodies, yellowish, with brown bands about them, were present.* The *fibres* were large, stretching often completely across the field of vision, dark margin and bright centre, finely granular in parts, and adherent to them were epithelioid cells and fungi. Most of them were twisted. We also observed the larva of probably a dipterous or neuropterous insect—a dragon-fly—with large eyes, external and highly active movable branchiæ, which passed rapidly across the field.

Chemical analysis of water from R. A. Lines, Lucknow :—

Water.	Total solids given as grs. in imp. gallon.	Chlorine as grs. in gallon.	Free Amm. as parts in one million parts water.	Albuminoid Ammonia as parts in one million of water.
Filtered	20·4	0·40	·13	·140
Unfiltered ...	20·6	0·35	·16	·060

Remarks.—The filtered and unfiltered waters of these wells are bad; and the analysis shows it is not improved, but rather made worse by being filtered.

(Signed) MURRAY THOMPSON, M.D.,
Chemical Examiner.

Roorkee, April 23rd, 1877.

The yellow elements, the description of which we have had placed in italics in the above report of the microscopical examination, arouse our suspicion, but we are not in a position at present to do more than draw attention to their presence; future research may demonstrate a connection between them and the coloured bodies found in Bursattee tumours and Delhi Ulcers.

Our opinions with regard to treatment of the disease in its early stages have been given in the VETERINARY JOURNAL, 1878, vol. ii., p. 321, but since that time we have had many opportunities of trying the method described there in chronic cases, and the results have by no means been so satisfactory. We may here quote a passage from Dr. Fleming's report, we think, with considerable advantage: "The treatment which experience has found the best is the same that follows from the pathology, and consequently may be now perfectly relied upon, and will, if carried out, prove thoroughly effectual—viz., destroy the cell substance and you cure the disease. This may be effected in various ways, but a strong caustic solution, potassa fusa, or nitrate of silver, might be used; and when the growth is destroyed, and not until then, treat the resulting ulcer on ordinary principles." We have tried the potassa fusa treatment in Bursattee with fair success, but its action is difficult to control. Perfect removal of the diseased parts by means of the knife has proved in our hands most successful, but the extent of the infiltration into the surrounding tissues necessitates considerable removal in order that no specific products remain. We have tried arsenic and iron internally; also iodide of sulphur applied to the wounds, but are not prepared to base any conclusions on the results. Our views on the nature of the disease suggest prophylactic treatment, but in the present state of the Bursattee question we cannot give any rules in this matter. [A glycerine solution of caustic potash would be worth trial.]

In conclusion, we have but to express a hope that our views may be tested and substantiated by subsequent observers. We have in this work made our observations with the greatest care, and have noted our results as they presented themselves, and on them have based our theory. The latter is entirely an after-growth, and its general acceptance, or the reverse, cannot influ-

ence the new facts by which we have endeavoured to advance the knowledge of Bursattee. We are not the first to advance a parasitic theory of Bursattee, but we believe we are the first to base such a theory on anything more than mere conjecture. The lines which research ought to take have been pretty thoroughly indicated during the course of our paper; but we may urge in recapitulation: 1. That the "cellulose tests" be applied to the cell-walls; if responded to, these would be conclusive as to the correctness of our views. 2. That the colouring matter of the epithelioid and round yellow cells be carefully examined and compared, both *inter se* and with known colouring matters, animal and vegetable. Thus it may be determined if the light-yellow, amber-yellow, and brown are simply results of changes from life-progress of the organism (the Sorby-Browning spectroscope is the best instrument for this investigation). 3. That the fibres be carefully examined with higher powers, and thus the question as to their hyphal nature be solved. This is, however, not an essential point of the theory, many facts of the cell-division and peculiarities of the cell contents of the distinctive Bursattee organisms tending to the conclusion that they are algoid rather than fungoid. 4. The connection, if any, between the round, brown cells and the epithelioid brown cells must be traced. 5. That the life-history of the organism be traced, firstly, by cultivation of the different forms of cells in various media, as especially glycerine or serum (from œdema or any other subcutaneous accumulation); secondly, by examination of suspected sources, especially the water-drinking, and artificial experimentation with such organisms of specific appearance as occur during the course of observation. 6. Multiplication and variation of the above-described inoculation processes. 7. Careful *post-mortem* observations, microscopical and necroscopical. 8. Statistical records as to hereditary transmission of the disease, prevalence in sex and breed, influence of age, temperament, and general management; also geographical distribution, and influence of treatment on the various phases of the disease.

SPECIAL FORMS OF TORSION AND DISPLACEMENT OF THE COLON IN THE HORSE, PARTICULARLY IN REFERENCE TO THE CAUSE OF DEATH; AND THE USE OF THE TROCAR AND CANULA IN TYMPANY.*

BY PRINCIPAL WALLEY, ROYAL VETERINARY COLLEGE, EDINBURGH.

IN introducing this subject to your notice I do not intend to make any lengthened remarks, but merely to supplement those which I made in the paper which I read at the meeting of the Liverpool Association in 1875.

Since that time I have been enabled to diagnose, with almost unerring accuracy, three very important forms of twist and displacement. These are: 1stly. Torsion or displacement of the double colon, with venous strangulation; 2ndly. Torsion of the double colon with arterio-venous (complete vascular) strangulation; 3rdly. Displacement of the double colon—sigmoid flexure—inan obliquely forward direction, from left to right and across the small intestine.

Before describing these lesions in detail, I will briefly refer to the causes which are usually in operation to produce them. They are more frequently seen in "lorry" or heavy than in light horses, probably owing to the fact that the bowels of the former are more voluminous and more largely filled with food and water. The sigmoid flexure is pre-eminently liable to displacement, on account of its comparatively free position, and from the fact of its usually being the receptacle of a large quantity of semi-fluid matter.

The actual displacement may be, and in my opinion usually is, produced by either of the three following causes: (1) By rolling about in the agonies of Colic, or when turned out to grass, by pitching violently forward on the nose in attempts to lift a load, or from losing the feet in slippery weather, or by falling over an embankment; (2) By the powerful contraction of the muscular walls in spasms of the intestines; (3) By the action of

* Read before the Scottish Metropolitan Veterinary Medical Association, on September 24th.

gas (Tympany) in the interior of the gut when it is comparatively empty. The power of imprisoned gas to displace a knuckle of intestine is well and often seen in making autopsies of horses whose intestines have become inflated with gas from decomposition of their contents after death.

In any of the lesions I have particularised the attendant symptoms may not be developed or observed for several hours, and in the third form for many hours after the occurrence of the accident which has given rise to them. Their advent is undoubtedly most rapid in the second form. I am satisfied that in many cases a horse receives displacement or partial torsion of the colon when at work, and does not evince any decided symptom—not even Colic—for hours; in fact, not until the congestion of the intestine becomes pronounced; and in the third form, not until the small intestine and stomach become tympanitic.

In the *first form of colic displacement* the symptoms, then, may appear suddenly; in many cases, however, they are preceded by prolonged Enteralgia and symptoms of Enteritis. In due course the previously full, strong, and irritable pulse becomes softer the injected mucous membranes gradually paler in colour, and the body bedewed with moisture; the countenance anxious, and the breathing somewhat hurried and laboured. The head is turned wistfully to the flank or side, the enteric pains are more subdued, but still persist; and most markedly of all, if attempts are made to distend the jugular vein for the purpose of bleeding, it will be found impossible to render it tense, difficult to drive the fleam into it, and when opened only a comparatively small quantity of blood can be abstracted, and that is usually of a dark colour. This condition of the jugular becomes more pronounced as dissolution approaches. The posterior bowels are usually emptied rapidly, the fæces being pultaceous and passed in small quantities at the outset. The temperature does not, as a rule, exceed 104° F., and on rectal exploration the resilient tumour, which I have before described as characteristic of intestinal torsion or displacement, may be felt, as may also the tense and twisted longitudinal bands of the gut. After death there is usually sero-sanguineous effusion into the peritoneal cavity. The occluded intestine is enormously increased in bulk, in weight,

and in thickness. The peritoneum is sometimes intensely congested and ecchymosed—in this case it is always associated with peritoneal effusion, at other times it is nearly normal in colour. On making an incision through the intestine, a quantity of fœtid gas escapes. The egesta is usually mixed with large quantities of blood-serum, and not infrequently coloured with hæmatin, owing to solution and transudation of the liæmato-globulin from pressure; at other times it is mixed with coagula of blood, or large quantities of fluid blood. The mucous membrane is thickened, softened, dry, corrugated, and roughened on its free surface, of a dirty brown or green colour, and frequently fissured. The sub-mucous and sub-serous tissue is infiltrated with serum to the extent of from $\frac{3}{4}$ to $1\frac{1}{2}$ inches, while its small vessels are engorged to their utmost. The arteries are empty, the veins fully distended with semi-coagulated blood, which oftentimes resembles damson pulp, and is composed mainly of coloured corpuscles, many of which are ruptured and their walls shrivelled. The lymphatics on the exterior of the intestines are charged with lymph. The line of demarcation between the involved and free portions of gut is very pronounced, as it is also in the second form.

In the *second form of colic displacement* the accompanying symptoms are developed suddenly and with great violence. The pulse is bounding, almost incompressible, the jugular and superficial veins—full of blood—can be readily distended, and when opened the blood flows with great force, and is bright in colour. Venesection only reduces the pulse to a slight degree, and gives but little relief from pain. The mucous membranes are intensely injected, perspiration profuse, tremors marked, eye prominent, countenance desperate, and the pain is persistent and agonising, manifested in a great variety of ways, and cannot be relieved. Death usually takes place in from four to six or eight hours, while in the first form life may be prolonged for sixteen or even eighteen hours. On *post-mortem* examination, the intestine is found to be black, mortified, and friable, and the veins and arteries plugged. A very fœtid odour is evolved from the strangulated intestine and its contents.

In the *third form of intestinal displacement* the symptoms are

manifested gradually, and usually secondarily—*i.e.*, after an animal has suffered from Enteralgia from any cause for a number of hours. Only two well-marked cases of this form have come under my notice. The pain is subdued; in fact, the animal may stand quiet for a long time, or may evince occasionally accessions of pain. The pulse is quick and weak, the mucous membranes injected, the breathing laboured, occasionally spasmodic; the temperature about 103° F., with moderate perspiration, and an anxious expression of countenance; there is continual œsophageal regurgitation of fluid and gas, great distension of the œsophagus being observed with each eructation, leading to the supposition that the animal is suffering from impaction of that tube. On auscultation the metallic gurgling sound peculiar to the movement of fluid and gas in a hollow viscus is heard along the whole course of the œsophagus, in the thoracic region, and over the stomach in the epigastrium. The animal may vomit a large quantity of fluid before death; in any case there will be attempts at vomition.

After death there may be an entire absence of congestion or inflammation of the colon. The small intestine usually presents punctiform hæmorrhage, and the gastric mucous membrane is more or less inflamed, this being the result of irritation by the retained ingesta and the medicines. The stomach, intestines, and cardaic end of œsophagus are distended with gas and fluid. The stomach, owing to its state of distension and the weight of fluid, may become ruptured if the animal falls.

In none of these forms have I referred particularly to such concomitant symptoms as yawning, sighing, neighing, gnashing of the teeth, clenching of the jaws, curling of the upper lip, backing against prominent objects, or pressing the breast against the manger, or the head against the wall, straining and groaning when the hand is introduced into the rectum, knuckling of the hind fetlocks, cold sweats as dissolution approaches, gradual muscular exhaustion, tympany, and jerking breathing, as they may accompany other forms of intestinal obstruction, and many of them may be absent.

The differential signs of these three forms of colic displacement, then, are plain. In the first, we sometimes have a prior

period of Enteralgia, which may be, and usually is, attributed to indigestion or Enteritis, accompanied by a full strong pulse and injected mucous membranes, and the jugular can be readily distended. This is followed by gradual emptying of the jugulars, failure of the pulse, lowering of the temperature, and diminution in the colour of the membranes. The pallor of the latter never being so extreme as in ordinary cases of internal hæmorrhage. Confirmatory signs are sometimes obtained by rectal exploration.

In the second form we have the intense and uninterrupted agony, the injected condition of the mucous membranes, the fulness and strength of the pulse, the fulness of the jugulars, and the rapidity with which death takes place. It may be asserted that these symptoms are those of Phlegmonic Enteritis, and to some extent they are; but the dry, furred, and livid condition of the buccal membrane so characteristic of Enteritis is absent, and the temperature is not so high. Moreover, death *rarely* takes place from Enteritis in so short a time as six or eight hours. Many of the so-called cases of inflammation of the bowels are nothing more than one of these two first forms of colic torsion.

The difference between the train of symptoms here alluded to is easily explained. In these cases in which there is only venous obstruction, the blood is constantly being pressed into the veins through the arteries, and as it cannot escape by its natural channels, the former become distended with blood to their utmost limits, and the pressure continuing, the fluid parts of the blood are finally forced through the walls of the capillaries into the intestinal cavity, into the peritoneum, and into the submucous and sub-serous tissues; the denser portions of the blood and the red corpuscles accumulating in the obstructed veins. In many instances the walls of the capillaries give way and extravasations result. The culmination of all this is *death by internal hæmorrhage*, the intestine acting the part of a sponge, through which the life-blood of the animal is gradually drained and squeezed into the peritoneal and intestinal cavities, and the connective tissue of the bowel. Hence the diminution in the colour of the injected membranes, the failure of the pulse, and the progressive emptying of the jugulars.

Where there is arterio-venous obstruction, mortification takes place rapidly, and death is produced by nervous exhaustion. The amount of blood lost to the circulation is so slight as not to interfere with the pulse or jugular veins.

The *rationale* of the symptoms in the *third form* of displacement is as follows :—There is not any, or but slight strangulation of the large vessels of the displaced colon; consequently circulation is not obstructed as in the two first forms, nor is pain produced. The compression exerted by the colon on the small intestine (duodenum or jejunum) forms an effectual barrier to the further passage of ingesta ; consequently, all the fluids introduced manually, or by the animal voluntarily drinking water, into the stomach and intestine are imprisoned ; eventually gas is evolved, and the stomach and intestine are distended to their utmost. The gas, by its own diffusive properties, passes into the œsophagus, anti-peristalsis takes place, and this forces the fluid also into the œsophagus, thus producing the regurgitation and borborygmal sounds already alluded to. Death in these cases is produced purely by exhaustion, and by interference with the normal functions of organs.

The cause of death in these three special forms of colic torsion and displacement is that which I have assigned ; but while saying this, I must call your attention to a recent translation by Mr. Steele of some remarks made by M. Bouley, to the effect that death is produced by putrid infection—*i.e.*, "absorption of products of putrefaction from the alimentary canal." I cannot agree with this statement, as I think it is highly improbable that such absorption could take place with the intestinal parietes in the condition I have described, and all the symptoms accord with the conditions I have pointed out.

Now as to the use of the trocar and canula in Tympany. I have adopted this method of giving relief to horses for the past seven years, sometimes affording immediate and permanent relief at the first introduction of the canula ; at others failing to obtain the slightest benefit through introducing the canula a dozen or twenty times in different parts of the abdomen—wherever, in fact, it has appeared to me that the greatest amount of gas was imprisoned. The conclusion is natural, that relief will be most

certainly and rapidly afforded in these cases in which the Tympany is circumscribed and due to decomposition of food, in which condition the gas passes freely through the canula without blocking it up; whereas in fermentation—with the ingesta, fluids, and gas forming a seething mass—the canula is constantly blocked, and the quantity of gas liberated is comparatively small. In my earlier experiments in this operation I found that very frequently I entirely failed to relieve my patient, and I soon discovered that, in some cases at least, my canula was too short. For the past five years I have employed a long (seven inches) curved trocar and canula, about a quarter of an inch in diameter, the advantages of which are: Firstly, that owing to the curve, the open extremity does not pass into the ingesta and become blocked, but by remaining in the upper part of the intestinal tube, it allows of the free exit of the gas; secondly, it is not so liable to become displaced by the peristalsis of the intestine and the movements of the animal.

In introducing the trocar and canula when an animal is on his back or side, it must be borne in mind that the relative position of the ingesta and gas are altered, the former gravitating to the lower part of the intestinal cavity, the latter ascending to its upper. Due allowance must also be made for the thick layer of abdominal fat which is always present in fat animals. The removal of the hair and the making of a small incision in the skin facilitate the introduction of the trocar; but in making this incision an unlooked-for accident may happen, viz., the infliction of a large wound by the sudden contraction of the muscles at the moment the lancet is introduced. Hence the necessity for gathering up a small fold of skin, where practicable, between the finger and thumb before making the incision.* The canula may, if it is thought advisable, be left *in situ* for several hours with impunity; but if any sign of displacement is observed, it should be withdrawn, as its free extremity would produce considerable irritation of the peritoneum. It may be utilised for the introduction of antiseptics directly into the intestine, and in cases of twist or displacement where the

[* All danger would be obviated by employing rowelling scissors to cut through the skin.—Ed. *V. J.*]

tympanitic intestine can only be felt through the wall of the rectum, there should be no hesitation in introducing the canula through this gut. The use of the canula in the circumscribed Tympany accompanying torsion and displacement is a point to which I wish particularly to direct your attention. I am satisfied that some cases of partial twist and displacement are cured by the spontaneous reduction of the involved knuckle of intestine, and that not infrequently the gradual removal of the imprisoned gas by absorption or otherwise is an important factor in this reduction. In any case, the longer the gas is allowed to remain in the intestine, the greater is the probability of congestion and mortification resulting, and the more certainly will the involved bowel become paralysed subsequently ; further than this, the removal of the pressure exerted by the gas must give some relief from pain, which, be it remembered, is often the actual cause of death in these cases, and the character of the evolved gas will enable us to decide as to the existence or non-existence of mortification. If necessary, the tapping should be repeated again and again, and in different situations. I have never yet seen any ill results follow the punctures, and if any hesitation is felt, the small trocar and canula attached to the hypodermic syringe may be first introduced.

ARTIFICIAL EYES IN HORSES.

BY THE SAME.

IN the October number of the VETERINARY JOURNAL for 1875 an article on this subject, by the late Mr. William Field, with some remarks by the editor, will be found.

An opportunity occurring, I last year determined upon proving the utility or otherwise of the horn discs, and through the kindness of Mr. Dollar, junr., I obtained one of these, manufactured by Messrs. Arnold. The subject of the test was a very valuable "lorry" horse, whose eyeball had been burst some months previously in a most unaccountable manner, while his driver was away at his dinner. All signs of inflammation in the injured eye had subsided, but the owner did not like the unsightly appearance it gave to the animal's face. The introduction of the disc

was accomplished in the manner described by Mr. Field with the greatest ease, and as observed by that gentleman, the difference in the appearance of the animal was striking. The disc, however, was too small, and during the night it became displaced. A few days subsequently I obtained a larger one, and after it had been allowed to remain *in situ* for four or five days, catarrhal inflammation of the conjunctive was induced, necessitating its removal, and the application of measures for the reduction of the inflammation. The same result followed the re-introduction of the disc several times, and I abandoned the idea of using it permanently ; but the experiment incidently illustrated the value of the disc in the cure of Entropium. For some time prior to the use of the disc I had noticed that Entropium of the upper lid was gradually taking place, and I was contemplating an operation for its prevention, but I found after the disc had been used for a short time that the tendency to inversion was reduced, and by its repeated use for a few days at a time I have now succeeded in doing away entirely not only with the actual inversion, but also of any tendency to it.

While referring to this case, I may direct your attention to the great benefit to be derived from the administration of iodide of potassium and calomel (alternated) in Lenticular Cataract. In this particular case, the uninjured eye became the seat of this lesion about sixteen months after the receipt of the primary injury ; and what was worse, the cataract developed insidiously, so that when I first saw it its formation was complete ; nevertheless, by persistence in the use of the above-mentioned agents, and the occasional application of ungt. hydrarg. iodid. to the side of the face, I had the pleasure of seeing the Cataract dispersed, a small spec alone remaining, and vision being perfect.

CASES RECENTLY OCCURRING IN PRACTICE.

BY A. E. MACGILLIVRAY, V.S., BANFF.

1. *Tubercular Sarcocele of the Cord.*—This took place in a one-year-old ox, which had been castrated when about six weeks old. When I was asked to attend him he presented all the appearance of never having been castrated, the tubercular deposits on the end

of the cords almost exactly resembling two testicles. Upon manipulation, however, one could easily discover that they were too hard and nodulated to be testicles.

The animal being otherwise in perfect health and good condition, I at once determined to remove the two hardened masses. Accordingly, having thrown and properly secured my patient, I dissected out first the one and then the other tubercular mass, and removed each by torsion. This averted hæmorrhage, which is a great consideration in such cases—I don't suppose there was an ounce of blood lost altogether. I put a single stitch through the lips of each wound, and poured a good supply of carbolized oil into the cavity in each side of the scrotum.

The parts excised weighed over six ounces each, and were composed of nodules of tubercular matter, of a rich yellow colour. The animal made a fine recovery, and is now, five months after the operation, in grand condition.

2. *Engorged Frontal and Superior Maxillary Sinuses.*—This case occurred in a very handsome one-year-old filly. When I was called, four months ago, the right nasal chamber was completely blocked up, not a vestige of air getting either in or out, and the left side was becoming so confined that the noise in breathing could be more heard more than a hundred yards away. I could find nothing wrong with the teeth.

I told the owner (a lady) that the only remedy was to trephine at once, and so evacuate the imprisoned matter ; for I was certain, from the abominable odour of the breath, that I had to do with a purulent and not a serous collection.

Thinking it always best to have professional help at hand in such cases, I dropped a note to my friend, Mr. Cooper, of Fordyce, and in due course we met, and threw and properly secured the filly. The greatest bulging or swelling existing in the frontal region, I resolved to trephine for the frontal sinus, and accordingly did so in the exact spot recommended by Peuch and Toussaint (see page 177 of their admirable work) ; and I am happy to say that I hit the right place, and evacuated a great deal of very badly-smelling thin as well as inspissated pus. I syringed out the sinus with tepid water ; and after doing so, I introduced my finger and found that the opening through

to the superior maxillary sinus was quite patent, so that Mr. Cooper and I both considered it unnecessary to trephine the latter sinus, more especially as there was little or no preceptible external bulging in that region.

The filly was left without any treatment for a couple of days; but after that interval I had the sinuses syringed out daily with tepid water and carbolic acid. This treatment was continued for a fortnight or so, and before another fortnight she was completely convalescent and all signs of the disease had disappeared.

In cases such as the above I have ceased using strong caustic injections, as I consider them too irritant for the delicate membrane lining the sinuses. Tepid water, with a slight dash of carbolic acid, will be found to do admirably.

3. *Relapse of Disease in Superior Maxillary Sinus after four years.*—This horse was operated on when one year old, and he is now five. Previously I trephined both superior maxillary and frontal sinuses—there being unfortunately no connecting opening between them; an immense quantity of golden-yellow serum was then evacuated. Just now I found only the superior maxillary sinus affected on the right side, with a purulent discharge from the nostril of the same side. I did not find it necessary to trephine in this instance, as I managed to push a large-sized strong teat catheter through the spot previously trephined, and thus allowed a pretty large quantity of offensive purulent matter to escape.

The injection of tepid water and carbolic acid daily for twelve or fourteen days had the desired effect, and I have heard no more of him.

4. *Blood-Poisoning from a Diseased Tooth or its Socket.*—This case occurred in a filly, rising three years old, about last New Year. I was sent for to see her, as "she couldn't eat and had a lump on her jaw." The lump was on the right-side ramus of the lower jaw—immediately below the first and second molars. On examination inside the mouth I was regaled with a most abominable smell, which I found proceeding from the first and second molars on the off-side. None of the deciduous teeth were shed, and those of the two molars referred to were quite black and had a good hold of the gums. I took off the remains of the decidua, and found some black putrid matter between them and the per-

manent molars. This matter had a most disagreeable effluvia, and appeared to dip down between the inner side of the first permanent molar and its alveolus or socket; immediately below this was the *lump*, which was quite hard and unyielding. I cleared away all the putrid matter as well as I could, and brushed the parts with an astringent and carbolized wash. The dressing of the parts was continued for a few days, and the filly began to eat a little better; but the lump and the noxious smell remained.

One morning, about a week after my first call, I was sent for in a great hurry. The filly was suddenly taken very ill; she was rising and lying often, breathing very hurriedly, and sweating profusely. Somehow or another I dreaded the worst, and accordingly, by the time I arrived, she was dead! She died within three hours after the severe attack. I made a very minute *post-mortem* examination, and found all the symptoms of a blood-poisoning present, extensive deposits of yellow serous exudates in all parts of body; spots of ecchymosis on all the serous membranes; in fact, to my mind, the case was but too evident—viz., blood-poisoning supervening on absorption of part of the putrid or diseased material about the tooth or jaw; for the inner part of tooth-socket appeared much discoloured all the way down to the lump, which latter was dark brown in colour, very hard in consistence, and seemingly attached to or part and parcel of the maxillary bone.

On mentioning this case to my neighbour, Mr. Cooper, of Fordyce, he informed me that about the same time he had a horse with a putrid or caried tooth and jaw, which died very suddenly, with like symptoms, but he never thought of making a *post-mortem* inspection.

GLANDERS AND FARCY IN INDIA.

BY A. E. QUERIPEL, M.R.C.V.S., R.A., ON SPECIAL DUTY, PUNJAB, INDIA.

I HAVE before drawn attention in the VETERINARY JOURNAL to the existence of this disease as it is observed in India, and having lately been employed for the purpose of reporting on its prevalence in the Punjab, and also subsequently for the purpose

of endeavouring to exterminate it from the Grand Trunk Road, I shall now lay before your readers a short outline of an outbreak of the malady, the existence of which was at one time denied in this country; in fact, I may say that even now-a-days there are many old Indian officers who would deny its presence.

The line of rail, extending as it only does to Jhelum, *dâk* service, or mail coaches, are the only means of travelling between that place, Rawalpindi, and Peshawur. On this line, which is 170 miles in length, about 400 horses are employed; while, again, between Rawalpindi and Thull—a distance of 172 miles, but on which the traffic is more restricted—250 only are used.

I had always entertained the idea that Glanders was in a measure prevalent in the Punjab, but I was totally unprepared to find the disease so widely spread. In the following return will be seen the numbers which have been discovered and shot from April last, whilst others still remain under police surveillance; and I may add that, in addition, seventy-six deaths had occurred from this disease during the previous twelve months.

Line.	Government *Dâk* Horses.	Ekka Ponies.	Total.	Remarks.
Peshawur ...	29	1	30	Ekka ponies are animals used in small carts by natives when travelling from place to place.
Jhelum ...	10	1	11	
Kohat and Thull	12	1	13	
Murree ...	1	2	3	
	52	5	57	

During this time, numbers of officers' horses and baggage-animals were daily proceeding along the road on their way to join the Khyber and Kurrum columns, and therefore the danger of the disease reaching our troop horses at the front was very great. No time was to be lost. I had seen baggage-animals in close proximity to most virulent cases of Glanders, and therefore I applied for authority to destroy all affected horses, and also for power to place under police surveillance any that might be considered suspicious. This was immediately granted, and further, I am glad to say that Government has laid down the clauses of the penal code under which persons can be prosecuted for driving affected animals. This, considering the total absence

of legislation on the subject, must be looked upon as a step in the right direction; still, I feel that until a special Contagious Diseases (Animals) Act is passed very little will be done, and to this the attention of the veterinary profession should be turned; for in a country like India, where so much depends on the beasts of burden, the means of arresting the progress of contagious diseases should always be at hand, without having to wait for special authority, as is the case at the present time. I trust, however, that by the steps which Government sanctioned on this occasion, the disease may be greatly lessened, at least on the Trunk Road; but much more is still required. I feel fully convinced that all the large towns and villages are centres from which the disease becomes disseminated, and the fact that these Ekka ponies have been discovered goes far to prove the truth of the assertion that they belong to inhabitants of various places, mainly bordering on the Trunk Road, and of course at present are only casually detected. If, therefore, Government wishes to rid the country of such a dreadful scourge, most careful inspections will have to be made, and time alone will effect this much-desired object. Government has already sanctioned the employment of six *salutrees*, or subordinates, and I trust that with attention to sanitation, etc., the disease will entirely disappear from the *dâk* stables. The buildings in which cases have occurred have been thoroughly disinfected, and in many instances entirely abandoned. We therefore have every reason to hope that at least the worst of the business has been seen. I feel, however, that as soon as the present strain on owners of horses is relaxed the malady will re-appear; the natives will purchase any animal, however much diseased it may be, and will take steps to conceal him. Thorough and constant supervision is therefore required, and now that Government has taken the matter in hand, and has seen the danger which is incurred by allowing it to remain unnoticed, I trust that this will be but the stepping-stone to a higher system of veterinary organization, which will obviate and render impossible a state of affairs such as I have described.

ON DISEASE OF THE MUSCLES OF THE HIND LEGS OF COWS, FOLLOWING PARTURIENT APOPLEXY, ETC.

BY "CYCLOP."

ONE of the annoying and troublesome *sequelæ* of "Milk Fever" is the inability of the animal to rise. Although in all other respects apparently quite restored to health, the cow remains down for weeks, perhaps for months—in fact, until it either dies or is slaughtered. When a *post-mortem* examination is made, the muscles of the thighs and quarters are found to be a mass of disorganised tissue.

In the March number of the VETERINARY JOURNAL, in a brief report of the discussion which followed the reading of an able essay on Milk Fever, before the Liverpool Veterinary Medical Association, Messrs. Barnes and Elam both stated that they had met with the same diseased condition of the muscles as that to which reference is now made. A wish may be expressed that a fuller report of their remarks had been given; for this particular sequel of Milk Fever has not been much commented upon by veterinarians. It has probably been confounded with paralysis, which it very much resembles.

But before proceeding further, it may be stated that occasionally after recovery from Gastro-enteritis and similar affections, cows are found unable to rise, and their hind legs, upon subsequent examination, are found to be in the same diseased condition as that described above. And further, instead of both, only one limb may be affected. It therefore cannot be regarded as a specific sequel of Milk Fever, although it appears to occur more frequently after that disease than after any other.

The immediate cause of the animal's inability to rise, in the opinion of the writer, is sprain of the muscles, with laceration of their fibres, and consequently extravasation of blood into their substance. Upon this hypothesis, the morbid changes afterwards found in the muscles may be readily accounted for and understood. The muscles can easily be sprained and lacerated by the animal's struggles while in a semi-unconscious state, or in trying to rise when the unconscious stage has passed. This view of the disease was adopted after examining several carcases of animals that had been slaughtered a few days after recovery from Milk

Fever, because they could not rise. The adductors of the femur and tibia, a few inches from their attachment to the symphysis pubis, were found to contain coagulated blood, and to present what appeared to be torn fibres. Examination of the diseased tissue with the microscope would throw much light upon this part of the subject, and would also determine whether any other disease —such as fatty degeneration—was present.

As favouring the view taken of the nature of the injury to the muscles, it may be stated that all the animals which have been seen to suffer from it were those which had been standing for a long time in byres, and getting little if any exercise—a system of treatment rendering their muscles soft and ill adapted to bear any unusual exertion.

The importance, practically, of being able to distinguish this from other and perhaps milder forms of disease causing inability to rise, must not be overlooked. This, generally, can be easily done, as the attitude assumed by the animal is so characteristic that it can be seen at a glance when it is affected with this disease of the muscles. The position of the hind extremities is different from that of the healthy recumbent animal; for, instead of being semi-flexed, they are extended straight forward to the shoulders, making it appear as if it were squatting. It may be able to turn itself from side to side, and to struggle round the box, but no attempt is ever made to flex the legs and get them back into a natural position. Some hard, deep-seated swellings not very sensitive to the touch, may be found at the upper part of the thigh, but there is seldom much swelling of the limbs, and there is no paralysis of the tail.

Owing to the unvarying failure of all the remedies tried, no treatment is recommended. It is best to advise slaughter, as the animals are generally in fair condition and the chance of cure is remote. When only one limb is affected, a cure may be attempted, as with a little help the animal may be got to stand. If our clients were to allow their cows a fair share of walking exercise daily, this affection of the legs would very seldom be met with.

In conclusion, it is hoped that others who have met with cases of this disease may express their views, so that we may get a clear and correct conception of its nature, and be able to diagnose it correctly, and point out a preventive if we cannot cure.

Editorial.

THE EXTINCTION OF CONTAGIOUS PLEURO-PNEUMONIA.

THERE is at length a prospect of release from the ravages of one of the most serious scourges that ever visited the bovine population of this or any other country, if the Government cares to adopt those measures which have now been proved to be completely efficacious in extinguishing it. Contagious Pleuro-pneumonia still lingers in these islands, and will continue to do so in all probability until the end of time, unless its insidious contagiousness and protracted latency are fully recognised, and the utility of inoculation as a protective measure fairly acknowledged and resorted to when necessary. The mere slaughter and isolation of disease centres for a short time, as is at present carried out, will not extinguish the scourge. This is now amply evident from the experience of these measures not only in the three kingdoms, but also in those countries on the Continent (as North Germany, Belgium, and France) where they are alone in operation; whereas in the kingdoms where slaughter of the diseased, and protective inoculation of the as yet unaffected, are compulsory, the disorder has nearly been suppressed (as in Holland), or is altogether subdued. The persistency with which the value of inoculation has been ignored in this country would be astonishing did we not know how stubbornly some people shut their eyes to the light, and close their minds to the reception of facts which are not in harmony with pre-conceived notions, or are adverse to opinions hastily promulgated and based on very imperfect knowledge.

The evidence in support of protective inoculation is now too serious to be sneered down, or made the sport of small witlings who joke about "Pleuro-pneumonia in the tail." The accumulation of facts, the result of scientific research and practical observation, given in Professor Pütz's admirable monograph,* published last year as one of Pflug's *Vorträge für Thierärzte*, cannot be dispersed by the bluster of unreasoning incredulity or the assertions of the inexperienced. Every month this accumulation has been added to, and the most recent addition to the now extensive store of literature in favour of this measure—that of our accomplished colleague, M. Dele, Government Veterinary Surgeon in Antwerp—is well worthy the perusal of those interested in the question.† But perhaps the most convincing evidence which has yet been brought forward is that furnished by Mr. Rutherford, of Edinburgh. Perhaps no city in Europe has suffered so severely from Contagious Pleuro-pneumonia since its introduction into Britain than the Scottish capital. Its dairies have been cleared out again and again, and scores of dairymen have been ruined through its ravages. Inoculation was tried there and in the neighbourhood many years ago, but it was not practised in a scientific or systematic manner, and the losses it inflicted were even more serious than the disorder itself; until at last the dairymen

* Die Lungenseuche als Gegenstand der Veterinär-Sanitätspolizei. Leipzig, 1878.
† De l'Inoculation préventive de la Pleuropneumonie. Anvers, 1879.

would have no more of it, and had to content themselves with their chance of escape or hurrying off all their stock to the slaughter-house when the contagion appeared among them. A year or two ago Mr. Rutherford arrived from Australia, where he had witnessed the wonderful results from inoculation obtained in the practice of Mr. Mitchell, F.R.C.V.S., of Melbourne. At that time the disease was rife in the Edinburgh dairies, and only after very great persuasion was he allowed to try scientific inoculation on a few cows—the dairymen not only being incredulous as to any benefit to be derived from it, but averse to it, remembering, as they did, the mortality it occasioned years ago. But with a mortality almost *nil*, and absolute protection conferred upon the cows successfully inoculated, confidence in the measure was gradually created, and now nearly three thousand have been so protected. We say *protected*, for we are assured, and the assurance rests largely upon personal inquiry among the dairymen, that not one of these inoculated cows has ever taken the disease, though exposed repeatedly to infection; and so strong is now the belief in the protective influence of the operation, that the cowkeepers whom we interrogated declared they would have no hesitation whatever in allowing any number of sick cattle to cohabit with their inoculated cows, as they were confident, from their experience, that the disease would not extend to them. Edinburgh is at present free from the scourge for the first time since 1841, and Mr. Rutherford is now conferring on the districts around the immense boon he has conferred on his native city. The mortality from inoculation is less than one per cent., and it would undoubtedly be much less were the directions to the dairymen fairly carried out. Still further testimony in favour of the operation in Edinburgh is to be found in the fact, that no inoculated cow killed in the abbatoirs has ever shown any traces of the disease when its carcase was dressed. And the strongest proof, perhaps, of any that has yet been adduced, is afforded by the handsome testimonial presented to Mr. Rutherford by the Edinburgh dairymen, at a banquet to which he has been recently invited by them, in acknowledgment of the great service he had rendered them in this instance. Perhaps no class of men in the three kingdoms is so hard-headed, shrewd, or difficult of conviction as these dairymen, and their affirmative evidence tendered in such a substantial manner speaks volumes for Mr. Rutherford's success.

It is curious that while certain authorities have done their utmost to discredit inoculation, they have never attempted to explain, if they understood, its phenomena. There can be no doubt that when properly performed, and when all due care is exercised, it is as protective as, if not more so than vaccination is of human Variola; that the morbid process set up as the result of inoculation is specific, and is not witnessed, so far as we can ascertain, in any other than the bovine species, and that the entire organism appears to be affected.

Surely it would be worthy of Government to accept Mr. Rutherford's challenge,and give him an opportunity of benefiting English cattle owners, as well as those across the border. This pitiless and continued slaughter of diseased cows, and the terrible embarrassment to agricul-

turists which the present fruitless measures produce, will soon become little short of a crime in presence of the absolute immunity and humanity which are the attributes of protective inoculation. It is for the country to put the requisite pressure on the Government—without this, affairs will, we may be sure, remain as they are. Anything that occasions trouble will never be, has never been adopted except under compulsion. It is high time we were rid of Lung Disease, now we know how to extinguish it, but the Government must be compelled to adopt the necessary measures.

THROMBOSIS OF THE POSTERIOR AORTA AND ILIAC ARTERIES.

In the extensive series of reports from district veterinary surgeons which go to make up a general and official report on the sanitary condition of domestic animals in Belgium for 1876, a copy of which has been kindly forwarded to us by Dr. Wehenkel, of the Brussels Veterinary School, compiler of the document, we find an interesting and instructive observation from Veterinary Surgeon Salembier, of Leuze, having reference to Thrombosis of the posterior aorta and iliac arteries, which we lay before our readers.

At the commencement of August, 1875, Salembier was called to attend a rather small bay mare, twelve or thirteen years old, belonging to Count Goussancourt, of Pipaix. For some time before his visit, the animal, when at exercise for a certain time, went lame on the left hind limb. In the stable, however, it was quite lively, and ate and drank well—in a word, there was nothing perceived amiss with it. When made to trot, Salembier could not detect any irregularity in its movements; but in about a quarter of an hour the mare appeared to suffer, the left hind leg became stiff and felt colder than the right. After five minutes' rest the lameness had completely disappeared; but soon after exercise was resumed it again manifested itself. This experiment, repeated several times in succession, always yielded the same result.

Salembier diagnosed a more or less complete obstruction of the iliac arteries of the affected limb, and gave an unfavourable prognosis. He nevertheless bled the mare, and prescribed large doses of nitre which were to be given for some time. In fifteen days no amelioration was observed in the animal's condition, but on the contrary, both hind limbs were now affected. An examination *per rectum* discovered the termination of the aorta to be a little more resisting to the touch than usual, though its pulsations could be distinctly felt.

The creature was turned out to graze in a paddock for another fifteen days, at the end of which time all the symptoms were considerably aggravated after somewhat rapid exercise sustained for ten to fifteen minutes. The hind legs were dragged along with difficulty; the entire body was covered with an abundant perspiration, with the exception of the hind-quarters, which were quite dry and lower in temperature than the other parts; the respiration was hurried; the face *grippé*—the nostrils dilated; and if she had not been stopped she must have fallen, as she staggered about and could scarcely preserve her equilibrium. When standing, she appeared to be in the greatest pain, and threw nearly all her weight on the front part of the body; on being left alone she lay down instantly. In a quarter of an hour she had quite recovered. All this train of symptoms only confirmed Salembier in his diagnosis and prognosis.

Professor Laho, of the Brussels Veterinary School, was consulted, and after an examination, confessed himself quite in accord with Salembier as to

the nature and gravity of the affection. Nevertheless, as the owner was desirous of keeping the mare alive and having her submitted to further treatment, it was decided to administer, alternately, potassium iodide and arsenious acid. No improvement took place, however; the disease progressed, and all the symptoms became aggravated.

Soon after the Count disposed of the mare to Baron du Sart for his pack of hounds, and towards the end of January Salembier was consulted by that nobleman with regard to this singular case, when he declared all treatment useless. Another veterinary surgeon, however, gave it as his opinion that the animal was affected with disease of the spinal cord, and had a large blister applied along the spine. This did no good, and after a fortnight the disease had advanced so far that the mare could not walk forth more an four minutes without falling.

In order to assure himself as to the cause of this morbid condition the Baron called in Salembier to make an autopsy of the animal. The calibre of the posterior aorta at its termination was found to be obliterated by a yellow and very dense fibrous clot, five to six centimetres in length. The iliac arteries, internal as well as external, were filled with clots of a less dense consistence, and colourless like that in the aorta. These clots wers separated by a constricted portion, which gave the arteries a moniliform appearance. The other organs, as well as the spinal cord, were normal. The morbid specimen was sent to the museum of the Brussels Veterinary School.

THE TRANSMISSIBILITY OF BOVINE TUBERCULOSIS.

THAT the Tuberculosis of cattle is a transmissible disease, and can be conveyed not only to animals of the same, but also to those of other species in various ways, is now an established fact, upon the recognition of which we have for many years insisted; and since we first called attention to it, some of the best pathologists in Europe have furnished additional testimony as to the readiness with which this transmission takes place, not only by inoculation or ingestion, but also, it would appear, by cohabitation of diseased with healthy animals. In the early part of this year, Colin, of Alfort, contributed a series of observations with regard to the communicability of the disorder; several German and Italian authorities have also published their experiences; and, lastly, we have the celebrated Professor Orth, of Gottingen, furnishing the results of his investigations and experiments in a recent number of Virchow's *Archiv*. All these are only confirmatory of what we have already stated, but this confirmation is not without its value. Orth's experiments once more demonstrate that the transmission of bovine Tuberculosis is possible between different species of animals, and he also points out the complete analogy—or rather, perhaps, identity—which exists between it and the Tuberculosis of man and other animals, pathologically, as he, Wagner, Schüppel, and others had already done with regard to its histology.

In his experiments to determine the possibility of transmission of the disease, Orth employed tuberculous matter from the cow, and the animals he inoculated were rabbits, because of their greater predisposition to contract Tuberculosis. He introduced as far into their mouth as possible, by means of forceps, morsels of matter the size of a small pea, which the majority of the animals readily swallowed: using raw, freshly-developed tubercle, as well as that which was undergoing caseous metamorphosis. He also employed human tubercle derived from caseous Pneumonia, and which was administered partly raw, and partly after having been boiled for ten to fifteen minutes.

Fifteen animals were fed with matter from diseased cattle, and nine of these were infected; while those to which the caseous matter from human lungs had

been given remained apparently healthy. Of the nine infected animals, four died, and the remaining five becoming extremely emaciated, were killed. On examination of the bodies nearly all the organs of the body were found involved in Tuberculosis ; in all the lungs were affected, but the serous and mucous membranes, lymphatic glands, liver, spleen, kidneys, and omentum were infected in different degrees. Microscopically, it was noted that the nodules—which always marked the first stage—were destitute of vessels, and chiefly composed of large epithelial cells, sometimes also of giant cells with several nuclei, most frequently contained in an easily distinguished reticulum. At the periphery of these nodules there were small lymphoid cells, while in the centre was the product of the degenerative metamorphosis of cells, as in caseous degeneration of tubercle in man. Great stress is laid upon the presence of giant cells, seeing that Friedlander depended on their absence to prove that the affection produced by inoculation was only Pyæmia, while Semmer and Metzquer asserted it was merely metastatic embolism.

From his experiments and investigations, Orth arrives at the following conclusions :—

1. The disease known as *Perlsucht* (the vulgar German name for Tuberculosis) is identical with the Tuberculosis of man, seeing that the affection produced in the rabbits has more resemblance to the human disorder than that of the cows from which the infecting material was procured, while the serous membranes were not affected in so marked a manner as in the cow—calcareous incrustation being nearly always absent, and replaced by caseous degeneration.

2. Tuberculosis of the cow is transmissible to other species, even through the digestive organs. Colin and one or two others have attributed infection to inspiration of tuberculous matter into the lungs ; but the precautions taken in these experiments, as well as the presence of disseminated grey pulmonary tubercles alongside ulcerations and caseous centres, dispel that notion.

3. The virus of Tuberculosis penetrates by the intact mucous membranes, resists the action of the digestive fluids, and constitutes a most dangerous poison. No parasite of any kind could be discovered in the tuberculous matter.

The possibility of the transmission of this affection to animals being proved, Orth insists that its transmission to man is possible. He, however, admits that the transmission by flesh is only as yet a hypothesis, and that new experiments are necessary to solve this grave and important question.

THE NON-VIRULENCE OF MILK FROM RABID ANIMALS.

In the Italian *Giornale di Medicina Veterinaria Practica* for January last, Veterinary Surgeon Giamperi, of Montegrimano, Italy, records the following interesting case. On September 24th a peasant named Gentili turned out a sow, four years old, and about to litter, to pasture, when a stray dog, on passing, bit it deeply on the nose and lip. The same dog soon after attacked two sows of a drove belonging to a man named Begni, but being pursued it was killed. Acting on the advice of the veterinary surgeon, Begni confined his two sows and watched them. In about twenty days after the injury they both became dull, grunted and groaned incessantly, at intervals munched their litter, refused all food, and great quantities of saliva flowed from their mouth. These symptoms increased, until, on the twenty-fourth day—the fourth of the disease—they could not be approached, the presence of people exciting them to fury. In two more days paralysis appeared, and death took place on the evening of the twenty-sixth day after the bites were inflicted.

The sow belonging to Gentili, which was first wounded, brought forth eleven young during the night of September 24th-25th. She was bitten on the 24th. Four of the progeny were killed by the mother overlaying them. The remaining seven were well suckled and grew rapidly. Hearing of the fate of Giamperi's swine, and the probability of his own sow becoming affected with Rabies, the superstitious man got the Curé of the parish to bless the animal in order to avert the malady. A useless procedure, for on the fortieth day after the bite, symptoms of the disorder appeared; on the forty-fifth day—the fifth of the disease—vomiting and paralysis set in, and the creature was then killed. Singular to remark, during the five days' illness the sow exhibited her usual affection for her young, and never attempted to bite them. The latter, after the death of their mother, continued well until they were six months old, when an outbreak of Anthracic Angina carried off six of them. The seventh was in good health at a year old. This account affords additional confirmation of what has been already made known with regard to the delay in the evolution of Rabies in pregnant and suckling animals, as well as the innocuousness of milk derived from rabid creatures—at least when ingested.

CONTAGIOUS INFLAMMATION OF THE UDDER IN CATTLE AND OTHER ANIMALS.

In "Veterinary Obstetrics" (p. 694) attention is drawn to a contagious form of Mammitis described by Professor Franck, of Munich, and Rivolta, of Pisa, as occurring in the cow and sheep; and in the VETERINARY JOURNAL for November, 1878 (p. 335), a translation is given of an interesting report furnished by Professor Dieckerhoff, of Berlin, on an outbreak of infectious Mammitis in Holstein. We regret that we have until now overlooked another excellent account of this contagious mammary disease of cows (*Eine ansteckende Euterkrankheit bei Kuhen*) by Professor Zürn, of Leipzic, which appeared in the *Deutsche Zeitschrift für Thiermedicin* for 1877 (p. 381), which is a complement to that of Dieckerhoff. From the description of the symptoms, at first there only appeared to be a slight elevation of temperature in the affected gland; mulsion did not cause pain, but the fluid obtained was a kind of citron-tinted serum containing clots of pus-like matter, yellow or white in colour, some of them having a conical form. At times, however, there were signs of general uneasiness or disturbance, and particularly much stiffness of all the limbs. In other cases the flow of milk suddenly ceased without any symptoms of disease. A microscopical examination of the milk—which had an acid reaction—revealed the presence of enormous quantities of *Micrococci*, *Mycothrix* filaments, and similar fungi spores of *Mucor mucedo*, and cells resembling those of beer yeast—some or all of which Zürn thinks may have been active agents in developing and spreading the disease, which was infectious not only among the cows, but affected also ewes and swine. The young of the cows, ewes, and sows which suffered from the disease died through sucking the milk.

STATISTICAL ITEMS RELATING TO ARMY HORSES IN ENGLAND AND FRANCE.

In the following pages will be found a few statistics of army horses, extracted from recent official sources, English and French. They are suggestive in many ways, and, it is hoped, will not prove insuperably dry reading.

Taking English army horses first, we learn from the "General Annual Return of the British Army" for 1877—the latest yet issued from the War Office

—that the number of army horses (exclusive of horses the private property of officers) serving in the United Kingdom from 1861 to 1878, varied from eleven thousand to nearly sixteen thousand. Besides these, there have always been ten or eleven thousand British cavalry and horse and field artillery serving and horsed in India ; but as the data relating to these furnished by the returns are very meagre, they have been omitted altogether in the present paper.

Of army horses, as aforesaid, there were serving in the United Kingdom on 1st January, 1877, a total of 15,143, viz. :—

Household Cavalry	845
Cavalry of the Line	6,843
Royal Horse Artillery	1,794
Royal Artillery	4,169
Royal Engineers	416
Army Service Corps	1,076

About one-third of the whole number (5,446) were five to eight years of age ; another third (5,529) were nearly nine to twelve years old ; while the rest consisted of animals (2,024) under five years, and (2,290) thirteen years and over, in nearly equal proportion.

The proportion of *old* horses, *i.e.*, thirteen years and over, was largest in the Household Cavalry and Army Service Corps, and smallest in the Royal Artillery.

Comparing the deaths shown in the returns as having occurred among horses serving in the United Kingdom during the year with the number of horses effective on 1st January, 1877, we get the following :—

Death-rates. Horses. United Kingdom, 1877.	
Cavalry of the Line...	19 per 1,000
Royal Horse Artillery	18 ,,
Royal Engineers	18* ,,
Army Service Corps	17 ,,
Royal Artillery	12 ,,
Household Cavalry	11 ,,

The death-rate for the whole British establishment was a little over 16 per 1,000, which was lower than in any year of the period included in the returns, viz., 1861-1878. The death-rate was highest in 1867, when it was 24·5 per 1,000, and in 1872, when it was 24 per 1,000.†

No information is furnished as to the causes of death. But if the numbers of horses struck off the rolls as non-effective from all causes, deaths included, be taken, the corps stand in different order.

Proportion of horses become non-effective from all causes, including deaths (Annual Decrease), United Kingdom, 1877 :—

Royal Horse Artillery	104 per 1,000
Household Cavalry	103 ,,
Cavalry of the Line	98 ,,
Army Service Corps	93 ,,
Royal Artillery	83‡ ,,
Royal Engineers	74 ,,

* The number of horses in the Royal Engineers is too small to admit of a strictly fair comparison with the other arms. Although the death-rate was high, there were only eight deaths in all.

† In his work, *Die Remontirung der Preussischen Armée*, Stud-Director Mentzel states that the average death-rate of Prussian army horses in quarters during the twenty-five years preceding the Franco-German war was 26 per 1,000.

‡ The "Annual Decrease" of the Royal Artillery appears larger in the "General Annual Return," as 292 horses transferred to the Royal Horse Artillery are included in the total of horses struck off the rolls.

The proportion of horses "cast" was largest in the Household Cavalry and the Royal Horse Artillery, and smallest in the Royal Artillery. The reasons of casting are not specified.

Turning now to the French returns, of which a summary is given in *L'Armée Militaire*, we find that those for the twelve months extending from 1st July, 1877, to 30th June, 1878, correspond nearest in point of date with the English returns just quoted.

The French Budget for 1878 provided for 123,000 horses, including 13,000 for the Gendarmerie. About 16,000 out of the total number were stationed in Algeria. Sixteen light cavalry regiments were mounted on arabs; the remainder on other horses, which are now recruited from the seventeen remount depôts in France. The mortality is shown as below :—

DEATH-RATES. FRANCE AND ALGERIA, 1877-78.

Cuirassiers	41 per 1,000
Train	39 ,,
Artillery and Artillery Train	27 ,,
Dragoons	26 ,,
Light Cavalry (French horses)	26 ,,
,, (arabs)	25 ,,
Schools	17 ,,

Three regiments of Spahis, mounted on a system of their own, are omitted from the above calculations. There appears to be nothing in the local distribution of the different corps to account for differences in the death-rates. The death-rate for the whole army was 30 per 1,000. That of the horses serving in Algeria was also 30 per 1,000 exactly. Of the total deaths as above, 22·7 per cent. are referred to Glanders and Farcy, 20·4 per cent. to Pneumonia, and 15·6 per cent. to intestinal affections. Arranged according to the proportion of horses struck off their rolls, the corps appear as below. Proportion of horses struck off the rolls (*réformes*) from all causes, deaths included :—

FRANCE AND ALGERIA, 1877-78.

Light Cavalry (on arabs)	118 per 1,000
Train	76 ,,
Cuirassiers	67 ,,
Light Cavalry (French horses)	58 ,,
Artillery and Artillery Train	53 ,,
Schools	39 ,,

The proportion thus struck off the rolls was 60 per 1,000 for the whole army for the year, and one-third higher, or about 100 per 1,000, for the horses stationed in Algeria.

The numbers of horses cast are not given, but the principal reasons of casting are shown as under :—

Worn out (*usure des membres*)... ...	50·5 per cent of total number cast.
Incurable Lameness	20·5 per cent. ,,
Growth	5·9 per cent. ,,

Here our "items" end; but a parting remark may perhaps be permissible on the desirability of such statistics.

The number of army horses stationed in the United Kingdom during the last twenty years has ranged from eleven to sixteen thousand. These animals are continuously subject to the best veterinary supervision; they are bought and kept and worked under conditions sufficiently identical to allow fair and reliable averages to be struck from their statistics. Fuller information concerning their sick and death rates, and the duration of their working powers, specifying, as far as possible, the sources whence the animals were obtained and the causes of disability or death, could not fail to prove interest-

ing and valuable, not only to the mounted branches of the service and to the veterinary profession, but to agriculturists and other large employers of horses. The same argument applies with equal or greater force to India and other foreign stations.

Nor must it be forgotten that—let red-tapists say what they will—the freest ventilation of all questions affecting the supply and managment of army cattle of all descriptions, in quarters and in the field—not at odd times when the subject crops up, but year after year—would prove the best guarantee against unwise economies and the recurrence of expensive and dangerous *fiascos*, like the "transport difficulty" at the outset of the recent operations in Afghanistan. H. M. C.

Reviews.

Traite d'Anatomie Comparée des Animaux Domestiques. Third Edition. By A. Chauveau and S. Arloing, Paris. 1879.

Strangeway's Veterinary Anatomy. Second Edition. Revised and edited by I. Vaughan, Edinburgh. 1879.

Vade Mecum of Equine Anatomy. By A. Liautard, M.D., New York. 1879.

Chauveau's "Anatomy," so well known to veterinarians in this country and America by the English edition published a few years ago, is universally acknowledged to be the best work on the subject in any language, whether it be considered as a dissection manual, text-book, or book of reference. The fact that it has already passed through two editions, and that the third has just been issued—the book being in use in nearly all the Continental schools—is in itself sufficient evidence of its great value. The new edition has been much improved, and there are important additions, both in matter and illustrations; so that the work well represents the present advanced position of veterinary anatomy in the French and Belgian schools. The additions in the way of letter-press and wood-cuts have made the volume more bulky, perhaps, than its predecessor; but then we must remember than anatomy is thoroughly taught in these schools, and nothing less than a perfect knowledge of the subject would pass muster. Whether we have regard to the descriptive portion, the wood-cuts—many of which are coloured, or the minor details, we are compelled to confess that no better student or practitioner's book on the anatomy of the domestic animals exists than this of Chauveau. We assert this with a full acquaintance with the other Continental text-books, some of which—as Franck's (*Handbuch der Anatomie der Hausthiere*), Gurlt's (*Handbuch der Vergleichenden Anatomie der Haus-saugthiere*), Leyh's (*Handbuch der Anatomie der Hausthiere*, and the French translation by Zundel), and those of the Italian schools—are most excellent and complete. Arloing, to whom Chauveau appears to have entrusted the preparation of this new edition, has evidently spared no pains to prove that the confidence reposed in him has not been misplaced. No better book on the subject—whether for the

student or the busy practitioner—has ever appeared, and its production in every way reflects credit on French veterinary science.

"Strangeway's Veterinary Anatomy" was, though mainly a kind of abbreviation of Chauveau's, notoriously incomplete and incorrect, and we are glad to notice that Professor Vaughan has done his best to remedy these defects in the second edition, which the work has now reached. It is difficult to say in what condition veterinary anatomy now exists in England. The second edition of Strangeway's treatise would lead us to believe either that the students have not the time or the capability of acquiring a thorough knowledge of anatomy, or that a very superficial acquaintance with it is all that is necessary. It is much to be feared (and our own personal experience still further strengthens the apprehension) that the extremely important subject of the anatomy of the domestic animals is not yet looked upon as one with which a fairly perfect acquaintance is needed on behalf of the student. English veterinary instruction, weak in many points, has never been anything like strong in anatomy. The new edition of the book now before us is a great improvement upon the first, and yet compared with the text-books in use abroad, it looks as if it contained only the merest rudiments of this very essential portion of the veterinary surgeon's professional knowledge. This and the relatively very high price are, however, the only faults we have to find with the book. Leyh's drawings illustrate it, but they are transferred to the letter-press, instead of appearing in the objectionable photo-lithographic plates as before. Additional cuts have been borrowed from the English edition of Chauveau's "Anatomy," while some of Mégnin's drawings furnish plates to the volume, which is well got up.

Liautard's "Vade Mecum of Equine Anatomy" is avowedly written for the use of advanced students and veterinary surgeons, and is an abridged work in which they may, without loss of time, review the descriptive anatomy of a region. The book treats, in fact, of the regional anatomy of the horse, the arrangement of the subject being adapted to the author's mode of tuition—the text of Fleming's translation of Chauveau being closely followed. Concision and condensation predominate, so that within less than two hundred pages we have an outline of the regional anatomy of the horse which is deemed sufficient to save students' time when reviewing their studies, and serve to refresh the memory of the busy practitioner who is about to operate. We consider that the "Vade Mecum" will fulfil this intention, and therefore recommend it. It is remarkably free from errors, so far as we have been able to ascertain, and is most convenient in form and size. The dedication is a compliment from American to British veterinary surgeons, and we gratefully acknowledge it, proving, as it does, that the Atlantic is no barrier to reciprocity in science or scientific appreciation.

Proceedings of Veterinary Medical Societies, etc.

VETERINARY MEDICAL ASSOCIATION.

Royal Veterinary College, 44th Session, 1879-80.

The first general meeting of the members of the Veterinary Medical Association was held in the lecture theatre of the Royal Veterinary College, on Tuesday, 14th October, 1879, at 6.30 p.m. The President, Professor Pritchard, occupied the chair.

A general invitation for this meeting had been issued by order of the President to all students at the Royal Veterinary College. Fifty-three visitorsr esponded to this. Twenty-three members, the President, and the Secretary also attended.

The minutes of the last meeting of the forty-third session were read and received. The awards of the session 1878-79, were then announced and distributed. Messrs. F. C. Gooch, H. Redford, T. J. Rippon, A. S. Auger, E. H. Scott, E. E. Bennett, E. C. Cockram, were then proposed as fit persons to become members of the Association.

The President announced the subjects for prize competitions for the coming session. He then officially intimated the nature of the agreement between the Council of the Association and the Governors of the College, whereby the library is now available for use by *all* students at the Royal Veterinary College.

The Secretary then read his report of the proceedings of the Association during the forty-third session, as sanctioned by the Council :—

Mr. President and Gentlemen,—The objects of the Veterinary Medical Association are—

1. Meeting together of persons connected with veterinary science for discussion of proposed subjects.
2. Awarding prizes to student members for superior attainments.
3. Formation of a library of reference and circulation.

I believe we are in a position to congratulate ourselves that we have been thoroughly successful in carrying out these objects during the forty-third session, the proceedings of which I have now to bring before you. In all there have been twenty-two general meetings of the Association during the session 1878-79, at each of which there has been an average attendance of about thirty "persons connected with veterinary science," members of the veterinary profession, students at the College, and visitors, professional and non-professional. The discussions have been varied, lively, and in many cases very original, and the "drawing out" of scientific ideas, the energy of argument, and tact of offence and defence displayed in these debates must have been highly beneficial to all of us who have attended the meetings. Such training is of great value to a veterinary surgeon. In few professions more than ours do men require to look more frequently under the surface to detect deceit and the cunning malevolence of ignorance ; and the juvenility of our profession necessitates that members of it be the better prepared to withstand such slights as members of older professions endeavour to inflict on them. The votaries of human medicine, the elder brothers of our science, are beginning to see that we are no longer in the confiding stage of childhood, but are prepared to question her dictates, to look into matters for ourselves ; they begin to respect and sympathise with us accordingly. The lawyer pompously cross-questions his veterinary witness, browbeats, bullies, and pushes him to prevarication, but concludes "that man is not by any means a fool." Dignitaries of the church begin to learn that our opinion is to be trusted, and possibility of referring to a veterinary

examination of a horse for soundness has rendered obsolete the saying, "Never buy a horse from a bishop." Physicians, lawyers, and clergymen thus feel that this new profession is beginning to assert with force its title to a place among the "learned bodies." The military man, though occasionally an old cavalry officer, dabbles in "horse medicine," recognises the improved health and stamina of his troop horses resulting from strict veterinary supervision. As we sow so shall we reap! Not a little of the improved aspect of the profession is due to the training given by students' societies to the coming race of practitioners. Among such societies ours is the oldest one in the veterinary profession, has the greatest influence, and can boast of having included in its ranks men whose present professional position vouches at once for their intrinsic worth, and the success of the training to which they have been subjected. In the supervision of our register of members, in which I, as Secretary, have been recently engaged, I have noted that, save where the "grim tyrant, Death," has interfered, a successful career as a constituent of this Society has been paralleled subsequently by progress in the profession in which we are all interested; nor is it in one only of the numerous types of the veterinary practitioner that we note this, we see it at every turn, whether in the wide range of country practice, in the sharp business of cities, with our armies in the field, or in the professorial chair, our constituents come to the front. Long may it be so; we have as yet no cause to fear a decline in the progress of our Association! When the Association was founded it was *the* Veterinary Society. Practitioners and students alike took part in its debates, and to each set of members it awarded prizes; but professional progress necessitates division of labour, and practitioners' societies arose throughout the country, when, in the struggle for existence, the Veterinary Medical Association assumed its normal position in the veterinary system of this country as the students' society of its largest college. Its certified members, passing into practice in various parts of the country, have originated local societies, but many of them retain their feelings of respect for the old Society unaltered. We owe to them many an instructive specimen and many a kind hint from their stores of experience, and from their sympathy we derive not a little encouragement in our labours. Some of them give us their personal encouragement by attending at our meetings, and others by performing with regularity and energy the duties of members of Council. To these latter gentlemen we are indebted for some sterling work during the past session—work which will give much increased stability to the Association. By frequent meetings they have revised the rules and regulations, a work, I can assure you, by no means as easy as it looks, and they have negociated a measure which will much increase the privileges of members. Thus henceforth you will have the luxury of a reading-room, where the library of the Association may be fully utilised for study and reference, and where the different periodicals taken in by the Association will be placed for your advantage. The imperfect use made of these periodicals during the past session indicates that further facilities for consulting them were necessary. The Council has decided that the following be added to those already taken in:—

Journal of Anatomy and Physiology, *Transactions of the Pathological Society*, *Students' Journal.*

The full list will be found on our notice board. The books of the library are now fully catalogued, and reference to the list will show that they number about 1,450 volumes. With such at your disposal you will little need to consult other sources, and will have no excuse for imperfectly "working up" the bibliography of your essay-subjects. Recently we had reason to regret the absence of the newest professional works, but this is now corrected, as reference to the catalogue will show; none of us will question that the funds of

the Association are thus well spent. Not the least onerous work of the Council is the adjudication of awards such as are announced on the prize list. The "Spooner Prize Examination" was conducted on the evening of the 24th March. Questions in anatomy, chemistry, and botany were given for the written examination. The answering of the botany questions was by no means satisfactory. In future the Council hopes that the application of this important science to veterinary medicine and surgery and hygiene will not be almost totally neglected by students. The candidates, of whom four presented themselves, were examined *vivâ voce* in surgery and medicine. The decision of the examiners was—

Gold Medal—Mr. William Frank Smith, of Downham Market.

Certificate of Merit—Mr. William Alston Edgar, of Dartford.

The answering was highly creditable ; as last year, the marks for the *vivâ voce* were most satisfactory.

A well-earned silver medal was awarded to Mr. Nicholson Almond for his preparations "illustrating the manner in which the cranial nerves emerge from the cranium." The excellence of this gentleman's specimens demanded an unhesitating favourable decision, though no others were sent in. These are on the table for your inspection. One essay on "Eczema Epizootica" was placed in the hands of the Secretary. The members of Council examined this, and concluded that it is worthy of the Association silver medal. On opening the sealed envelope which accompanied it, the author was found to be Mr. William Frank Smith. The Council, by a resolution of February 13th, 1879, decided that the rules having been so recently modified, the date before which the preparations and essays in competition for the silver medals must be sent in be the last day in May, as heretofore, and not the last day in March, as it will be in future according to the modified rules. In all eleven essays were read at the general meetings during the past session. Mr. Dixson, M.R.C.V.S., late Assistant Demonstrator of Anatomy at the College, favoured us with a paper on "Distemper as affecting the Dog." The discussion on this occupied two nights of meeting ; and it, with a remarkable specimen forwarded to the Association by Captain Russell, of Grantham, of "Diffused Encephaloid," and a case of "Ventral Uterine Hernia of the Bitch," drew our attention to Canine Pathology. Mr. W. F. Smith's paper on "Breeds and Breeding of Cart-Horses," and Mr. W. Beach's essay on "British Sheep and the Management of a Flock on a Light Land Farm," are valuable contributions to that science which is termed Zootechny. They illustrate the effects of artificial selection. Mr. Beach, in the elaboration of his subject, prepared specimens illustrating variations of the skull in the principal British breeds ; these he has presented to the Association, and for them he has received the thanks of the Council. A valuable series of preparations of the "Petrous Temporal Bones," from Mr. Nicholson Almond, was similarly acknowledged, and to that gentleman we are indebted for our only paper on pure pathology —his essay on "Inflammation." The theories therein placed under our notice should be well known to all veterinary surgeons as the most recent opinions of the leading authorities on the subject. His theory of treatment may be seen in the *Veterinarian*, May, 1879. Mr. Blakeway read a paper on "Specific Ophthalmia as affecting the Horse," and this, with a specimen of disease of the eye of the cow, by Mr. Golledge, are our contributions to Ophthalmic Surgery. Operative Surgery received attention from us in the following papers :—Mr. Geo. Gartside Mayor on "Herniæ ;" Mr. Steel on "Castration." I may be allowed to allude to the latter as having directed the attention of the members to the prominent position which the subject of "Cryptorchidism" occupies in the mind of the professional public at the present time ; and very opportunely Messrs. Slipper and Shipley brought forward the case of "Post-mortem Examination of a Rig" which may be read in the

April number of the *Veterinarian*. Mr. Gregory drew our attention to "Tetanus," and Mr. Bainbridge to the always interesting subject, "Navicular-thritis," which was illustrated with specimens by Messrs. Talbott and Blakeway, the latter giving us a case of "Navicular Disease in the Hind Feet." Mr. Golledge kept us well occupied in learning and discussing his views on "Foot Rot," reminding us that the sheep is by no means unfrequently our patient. While Mr. Titus Littler sustained his hereditary reputation for Helmintho-logy by his paper on "Equine Parasitism." The same branch of science was brought under our notice by Mr. Lepper's case of "Strongylus armatus in the Kidneys of a Colt." Generation and Development found notice in our examination of specimens of "Cartilaginous Cervix Uteri of a Heifer," and the "Generative Organs of an Hermaphrodite." The following other specimens were examined :—

"Perforation of Soft Palate by Overgrown Molar" (President); "Dilata-of the Œsophagus" (President); "Tuberculosis Hepatitis" (Mr. Golledge); "Cystic Disease" (Mr. Blakeway); "Atrophy of Posterior Lobe of Right Cerebral Hemisphere, with Communication of a Case of Serous Cyst of the Brain" (Mr. T. Fletcher); "Fracture of the Metatarsus" (Mr. W. F. Smith); "Enteric Disease" (Mr. Cattrall); "Rupture of Tarsal Ligaments" (Messrs. Davy and Steel); "Complicated Ringbone" (Mr. Steel); "Peri-carditis" (Mr. Steel).

Careful examination of the above-mentioned essays has been made by a Committee of Members of the Council. Their report is as follows :—

Honorary Fellowship (conveying "Special Thanks of the Association") —Messrs. Beach, Dixon, Mayor, W. F. Smith, Littler, Golledge, and Bain-bridge.

Association's General Meetings Prize—Mr. Nicholson Almond.

It was decided that the latter prize assume the form of a case of surgical instruments. I have no doubt you will sanction the award, with your sincere congratulations to Mr. Almond on his success.

The number of visitors at our general meetings has been quite up to the average, and we owe to many of them a debt of gratitude for valuable opinions expressed during the discussions. We enrolled twenty-eight new members, an increase of six on the preceding session. Three passed their Diploma Examination before the Royal College of Veterinary Surgeons, and obtained the Certificate of Membership.

At our first meeting on the 15th October, 1878, the following gentlemen were elected Student Vice-Presidents for session 1878-79:—Messrs. Donald Gregory, Nicholson Almond, Geo. Gartside Mayor, T. A. Huband, T. W. Lepper, F. Gowland Rugg.

We owe thanks to these gentlemen for the able manner in which they have performed the duties of their office.

The officers of the Association of the session 1877-78 were re-elected to their respective offices. The President has occupied the chair at many general meetings, and at all meetings of Council.

The Secretary has endeavoured to give us accurately and fully as possible the minutes of the Council and general meetings of the Association. He has also drawn up for the Council the report of the Spooner Examination Committee, and the revised register of members, etc. In performance of his duties as Librarian he has revised the catalogue of books in the library, and drawn up the library report.

I believe, gentlemen, that we may conclude our review of the session 1878-79 with the assurance that the Association is in every way vigorous and flourishing, and that we retain no business to retard our advance during the forty-fourth session, 1879-80.

Certified Members, 1878-79.

	George Crane Hunting .	1	(H. F. and F.)	Titus Littler .	7
	Samuel Oxton Langley . .	2		William Robt. Emery . .	8
	Alfred Charles Turner . .	3	(Sp. Cert. M.)	William Alston Edgar . . .	9
(H. F. and F.)	Joseph Bainbridge . .	4	(H. F. and F.)	Charles Hedworth Golledge . . .	10
(Ess. Sil. Med.) (H. F. and F.) (Sp. Gld. Mdl.)	William Frank Smith . .	5		James Ingham	11
				Ernest Edwin Batt . . .	12
(F.)	James Blakeway . . .	6		Fk. John Short	13

A vote was unanimously passed that this report be received.

The following gentlemen were then elected "Student Vice-Presidents" for the coming session :—Messrs. Slipper, Mayor, Lepper, Villar, Gregory, and Talbott.

A request was then made for the names of gentlemen willing to produce papers for discussion during the coming session ; but some difficulty existing in respect to a paper for the next night of meeting, the President undertook to engage the attention of the members on that occasion.

Mr. A. G. Banham, M.R.C.V.S. (Spooner Gold Medallist), then read a paper introductory to the study of disease ; and discussion of this was adjourned until the next night of meeting, as proposed by Mr. Huband, seconded by Mr. Beach.

The meeting then terminated.

John Hy. Steel,
Secretary.

List of Prizes and Awards Presented at the Commencement of the Winter Session, 1879-80.

Spooner Prize Examination.

Gold Medal—Mr. William Frank Smith.
Certificate of Merit—Mr. William Alston Edgar.

Association Silver Medals.

For Prize Essay—Mr. William Frank Smith.
For Prize Anatomical Specimens—Mr. Nicholson Almond.

Prizes, etc., for Essays read at the General Meetings of the Association.—Session 1878-79.

For the Best of all the Essays read, Five Guinea Prize—Mr. Nicholson Almond, for his essay on "Visceral Inflammations."

Honorary Fellowship Certificates—Messrs. Wm. Beach, for his essay on "British Breeds of Sheep, and the Managment of a Stock on a Light Land Farm ;" E. Lionel Dixson, M.R.C.V.S., "Distemper of the Dog ; G. Gartside Mayor, "Herniæ ;" W. F. Smith, "Breeds and Management of Cart-Horses ;" Titus Littler, "Equine Parisitism ;" C. H. Golledge, for his essay on "Foot-rot ;" J. Bainbridge, "Navicular Arthritis." (Placed in the order of the Committee report.)

The following gentlemen have received

Fellowship Certificates—Messrs. Gregory, for his essay on "Tetanus ' Blakeway, "Ophthalmia."

The following gentlemen have received the thanks of the Council of the Association for presentations :—Messrs. Nicholson Almond ; W. H. Beach.

The following gentlemen have received the thanks of the members for specimens forwarded for inspection at the general meetings :—The President ; Captain Russell, of Grantham, M.R.C.V.S. ; Messrs. C. Hedworth Golledge ; Slipper and Shipley, of Yarmouth, M.R.C.V.S. ; Harry Talbott ; Blakeway ; Lepper ; Penhale ; Hunting ; T. Fletcher ; W. F. Smith ; Cattrall, M.R.C.V.S. ; E. M. Davy, M.R.C.V.S. ; W. Almond ; J. H. Steel, M.R.C.V.S.

JOHN HY. STEEL, *Secretary.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Albion Hotel, Manchester, on October 15th, 1879. W. Dacre, Esq., President, in the chair. The following members and friends were present—Lieut.-Gen. Sir F. Fitzwygram, Bart. ; Professor Williams ; Mr. Geo. Fleming, 2nd Life-Guards ; Lieut.-Col. Lockwood ; W. Pallin, 20th Hussars ; J. Lambert, 17th Lancers ; S. M. Wilson, 12th Lancers ; Messrs P. Taylor, T. Greaves, Tom Taylor, W. A. Taylor, John Lawson, Alex. Lawson, M. J. Roberts, T. Hopkin E. Faulkner, J. B. Wolstenholme, G. Humphries, J. Paton, W. Holland, Mr. Green, and Mr. Snowcroft, of Manchester ; H. Fergusson and Mr. Harrison, Warrington ; W. G. Schofield, Pontefract ; Messrs. W. and J. Leather, J. W. Moore, and C. W. Elam, of Liverpool ; Messrs. Cartwright and Hill, Wolverhampton ; Messrs. J. A. Polding and T. Briggs, of Bury ; J. B. Taylor, Ashton ; Messrs. Bunnell and Hart, of Oldham ; J. Howell, Rochdale ; W. Woods, Wigan ; J. Brooks, Pilkington ; A. Darwell, Northwich ; S. Lambert and Sam. Greaves, of Thetford ; J. Cuthbert, Leeds ; C. Challinor, Pendlebury ; J. O. Martin, Altrincham ; A. Prescott, Pendleton ; J. C. Atkinson, Stockport ; R. Roberts, Kendal ; W. Whittle, Worsley ; H. Thompson, Aspatria ; W. Broughton, Leeds ; J. B. Unsworth, Market Drayton ; W. Bromley, Lancaster ; James Storrar, Chester ; P. Walker, Bradford ; J. Litt, of Bolton ; M. E. Naylor, Wakefield ; Dr. Renshaw, Altrincham ; Dr. Owen, Manchester, etc., and the Secretary.

Telegrams and letters of excuse were received from Professors Gamgee (Owen's College), Simonds, Pritchard, Walley ; Messrs. M. J. Harpley, T. A. Dollar, J. Welsby, J. Marshall, P. Walker, H. Beard, D. Hutcheon, T. S. Faulkner, A. Brooks, W. A. Cartwright, W. Johnson, G. Morgan, R. Reynolds, S. L. Buckley, A. L. Gibson, S. F. Fallding, etc., etc., etc.

The minutes of the last meeting were duly read and confirmed, after which Mr. T. Taylor proposed for election as member of the Association, Mr. George Humphries, of Manchester ; seconded by T. S. Locke and carried. Mr. E. Faulkner proposed Mr. W. Holland, of Manchester ; seconded by Mr. Whittle and carried. Mr. W. Leather proposed Mr. J. Leather, Senior, of Liverpool ; seconded by Mr. Jas. Paton and carried. Mr. S. Locke proposed Mr. H. T. Hodgkinson, of Rochdale ; seconded by Mr. T. Taylor and carried.

Mr. CHALLINOR nominated for membership Mr. Litt, of Bolton.

Mr. BROMLEY nominated for membership Mr. R. Roberts, of Kendal.

Mr. WM. WHITTLE then begged leave to nominate as Honorary Associates of the Association, Lieut.-Gen. Sir F. Fitzwygram, Bart., Professor Williams, Geo. Fleming, Peter Taylor, and Thos. Greaves.

Mr. T. TAYLOR said he had received a letter from Dr. A. Gamgee, of Owen's College, Manchester, in which he had kindly promised to read before this Association (during the winter) two papers upon the "Physiology of Digestion," with illustrations. This notice was received with great satisfaction by all present, and the Secretary was deputed to write Dr. A. Gamgee thanking him for his kind offer.

Mr. STORRAR, of Chester, then exhibited a specimen of skin disease in a cow, with photograph of the animal. Mr. PALLIN brought forward a specimen of disease of the intestine. The subject was a turf mare ; she had had repeated attacks of Colic since July, 1877 ; but in September last she died after one of them. Upon making a *post-mortem* examination there was found a large sac of bowel at the commencement of the floating colon, which was impacted with food. Professor WILLIAMS gave it as his opinion that the intestinal wall at this particular part had become paralysed, and in consequence could not act upon its contents.

Mr. PALLIN also exhibited an extraordinary specimen of rupture of muscles of the neck and dislocation, the dentata being twisted completely from the atlas ; he also showed a drawing and photo of the position in which the animal was found, dead. It had placed its head over a top bar at the box door, and firmly laid hold of the bottom bar with its teeth and become firmly fixed. Death must have been almost instantaneous.

Mr. GEORGE FLEMING then read a lengthy and instructive paper upon the "Responsibility of the Veterinary Surgeon,"* which was listened to with great interest by all present. A long discussion followed, in which a good many members and friends took part.

Mr. GREAVES said : Being the member who proposed that Mr. Fleming should be requested to bring before us this subject, I think it is only right that I should express my best thanks to him, and also offer him the best thanks of the Lancashire Veterinary Medical Association for having complied so readily and so kindly with our wishes ; and allow me to say that the manner in which he has placed the matter before us of the "Responsibility of the Veterinary Surgeon" reflects the highest possible credit on him. This subject has assumed a very serious aspect of late years, and it behoves us to carefully consider it, and if it be possible to place ourselves in a protected position. At this moment one of our members is being sued for £173 loss on a horse he examined. I have been in practice nearly half a century, and during that time have been almost daily engaged in the performance of operations, and in the examination of horses as to soundness. Up to the present time, I have not once been asked to make good any loss that may have been incurred by a purchase having been made on the faith of the soundness of my opinion. I do not for one moment presume to say that my opinion has been right in every instance, nor that I may not be held responsible to-morrow for some loss or other ; but what I wish to say is this, that I can conceive of no greater hardship or injustice to a veterinary surgeon than after he has made a careful, deliberate, and sincere examination, having exercised the best abilities he possesses, and given the opinion he has formed honestly, that he should be held responsible for any loss that may ensue on the purchase of said horse when the assumed cause of unsoundness is one of a doubtful or conjectural nature.

The best way that occurs to me to protect ourselves is this, let us always do our duty with the greatest possible care, whether it be an examination or an operation, and in our written certificate of soundness or unsoundness, as the case may be, we must clearly set forth "that we give this opinion in the full belief that it is true, but be it hereby distinctly understood that we do not hold ourselves in any way pecuniarily responsible for any ill results or losses that may take place." This subject has at various periods of my life caused me much study and earnest attention. I find in 1868 I read a paper before the Liverpool Veterinary Medical Association upon it—I took the opinion of counsel upon it at the time—which will be found reported at page 256 and following pages in the *Veterinarian* for that year ; I strongly advised every veterinary surgeon to have printed on his certificate the following words :—

* Published in the November Journal.

"This opinion is given to the best of my knowledge and belief, but I do not hold myself pecuniarily responsible for such opinion or the consequences of such opinion." I respectfully throw out this suggestion for the consideration or for the adoption of my professional brethren.

Sir F. FITZWYGRAM remarked that he quite agreed with all Mr. Fleming had said about the responsibility of the veterinary surgeon, but he was inclined to place the responsibility upon different, and perhaps upon somewhat higher grounds than that on which Mr. Fleming had placed it. It rests chiefly on account of the uncertain nature of the matter in which he is called upon to judge. "I will explain myself in this way: in the value of a house, it is the same to-morrow as it is to-day. If an expert gives an opinion, other people give it under exactly the same circumstances, and if he has given an erroneous judgment there are the means to rectify it. The veterinary surgeon gives his opinion upon moving matter, the value moves about from day to day, it may be sound to-day and unsound to-morrow. I am inclined to place the responsibility chiefly upon the ground that the matter in which he is called upon to judge is one upon which there is very great doubt. The veterinary surgeon should be a man able and conscientious, who can command the confidence of his employer, and I believe that the body of veterinary surgeons do command that confidence, and are a credit to the profession to which they belong."

Mr. P. TAYLOR thanked the essayist for his admirable paper, and referred to the difficulty experienced by the veterinary surgeon in the examination of horses. Veterinary surgeons were considered by the public to be experts, and are therefore considered to bring to that position a certain amount of knowledge, but in doing so you have a living machine in different conditions at different times. He did not think it was in the interest of himself or his professional brethren to give an opinion immediately, the animal should be left with them two days at least to give a fair opinion.

After a few remarks from several other gentlemen respecting Mr. Fleming's paper, the PRESIDENT suggested that the discussion should be adjourned until the next meeting. This was agreed to, and after a vote of thanks to the essayist and the President, the meeting terminated.

Immediately afterwards, the members and friends sat down to an excellent dinner, and a very enjoyable and convivial evening was spent.

After the usual patriotic toasts, Mr. A. LAWSON proposed the Army, Navy, and Volunteers, in which he said the recent exploits of our soldiers under enormous difficulties proved that we could still proudly say that our officers and soldiers are what they always have been, brave and devoted to their country.

Lieut.-Col. LOCKWOOD, 20th Hussars, very ably responded, as also Mr. JAS. LAMBERT, 17th Lancers, who referred to the war in Zululand, in which, he said, the veterinary surgeon was exposed to almost as many dangers as any one else. As regards the veterinary department, he would like to correct a very erroneous statement with regard to the horses of the 17th Lancers. It was reported that the horses were suffering from some disease and could not be brought home, this was not the case, as nearly all of them were sold, and averaged £4 more than the original price in England.

Mr. BROUGHTON, of Leeds, proposed the health of the Lancashire and other Veterinary Medical Associations.

Mr. HILL responded, as also Mr. Briggs, who, as a member of the L.V.M.A., said: I have to offer to you our heartful thanks for your presence this evening, the success of this meeting, no doubt, being due to the presence of Sir F. Fitzwygram and Mr. George Fleming.

Mr. T. HOPKIN then proposed the health of the President, Members of Council, and Examiners of the R.C.V.S.

Professor W. WILLIAMS responded, and said : I thank you very much for coupling my name with the Royal College, of which I have the honour to be President. It was remarked by Mr. Hopkin that the profession at one time consisted of scattered particles. I can well understand that any one being the President of these scattered particles would have a difficult office to fulfill ; but the profession now are a united body, have worked and collected the particles like a sheaf of corn. My friend on my left (Sir F. F.), we all know what he did for the profession, how he bound them together and how he left them. I am very proud to say that the Council, so far as they are concerned, have well attended the meetings, and everything has worked in harmony for the well-being of the profession.

Sir F. FITZWYGRAM, Bart., said he thanked them for connecting his name with the toast. It had been a great pleasure to him for many years to have been a member of the College ; he had trust and confidence in the Council, and thought it had worked well for the best interest of the profession, and believed in future there would be no rivalry, except that rivalry as to the good, best, and highest interest of the profession. He briefly referred to the work of the Council during the last few years, and said there was one measure he was most anxious to see carried out, viz., that the matriculation examination be conducted under the auspices of the Royal College. He would be in Scotland Friday following, and hoped to gain the assent of the Scottish schools to the scheme which has been adopted by the Royal College of London. In conclusion, he said they had a Council which would work with one heart and one soul for the advancement of the profession of the veterinary surgeon.

Mr. W. A. TAYLOR proposed the health and success of the professors and Colleges.

Professor W. WILLIAMS, being the only representative present, duly responded.

Mr. GREAVES then proposed the next toast—viz., the Veterinary Profession. He said : The subject is an extensive one ; it would properly comprise the veterinary practitioner, veterinary student, his education, the teaching of the colleges, the teachers, the examiners and the Council. I will, however, confine myself to some of the points of progress of late years. I have been occupied in this profession for over forty-five years, I have felt it to be an honour to me to belong to it ; it is an honourable calling. I can remember the time when, if a student paid his fee, however defective his education may have been, the College was obliged to receive him. It is not so now ; all this is changed, and many reforms have been carried in late years. But my toast is coupled with the name of a gentleman who is not only a most distinguished cavalry officer holding one of the highest and most honourable appointments in Her Majesty's service, but he is also a veterinary surgeon who is not only highly respected but is beloved by us all. I need not tell you I allude to Major-General Sir Frederick Fitzwygram, Bart., he is not only noble by birth but is noble by nature, he has himself both able and willing to serve us—everything he undertakes to do is done well. As you all know, he has filled the presidential chair for three years, during those three years he never missed one general meeting one quarterly meeting or one special meeting of the Council, he spared neither time, trouble, nor expense to perform his duties thoroughly and in every way to serve and advance our profession. I have sat under many presidents during the last eighteen or twenty years, but none with such entire satisfaction. Need I remind you that the profession is indebted to him for effecting reconciliation in the profession? It is he we must thank for the practical examination of the student, for our new charter, our supplementary charter, for our voting papers whereby we can all vote for

members of Council without the loss of time and expense of going up to London on the 1st Monday in May. The very last act of his official life was to serve us, in an attempt to get the principal of each school together to enter into an agreement that the preliminary examination of the student should be transferred to the hands of the Royal College of Veterinary Surgeons, instead of as now in the hands of the teaching schools respectively. To sum up, what I have to say is this, that by his influence and wisdom the Council have been enabled to pass measures which will not only redound to his and their credit, but will benefit the Veterinary Profession as long as it exists, and without him these measures would not have been carried. Need I allude to the magnificent prizes to the students to induce them to become better men? These noble prizes are his gifts: in a word, he has done more for the Veterinary Profession than any other man.

In reply to the toast of the Veterinary Profession,

Sir F. FITZWYGRAM said: I thank you heartily for the kind and hearty welcome you have given me. He thought he might lay down in this as in every other profession, that science, real science, is and must be progressive. Now the questions that were present to him were, firstly, Is our science progressing? secondly, is it as progressive in the latter part of this nineteenth century, as the nation and the best and truest interests of science demand? When he looked some years back on the state of veterinary knowledge in this country, when he reflected that it is exactly one hundred years since the first school was established in England, when he looked upon the extended curriculum which the students undergo compared to what they had at an earlier date; when he looked further abroad, and looked upon the able works which of late years (and especially from the pen of Professor Williams) have been sent forth from veterinary pens, he thought he might venture to say that veterinary science has been and is progressive. With regard to the second question, he would, in this age of progress and knowledge, ask them all to answer it for themselves.

Mr. GEO. FLEMING also replied, and he felt in duty bound to say that the profession, so far as he was able to judge, was progressing. The younger members who joined the profession promised to be good members; on no occasion had there been more unanimity of feeling and good-will than on this, and he thought that argued well for the good of the profession. He thought recent progress had shown that the profession is quite willing and will soon be ready to take that high position which our science commands, and he trusted he would see the day when it would have attained a position infinitely higher than at present.

Mr. T. TAYLOR proposed the next toast—viz., the National Benevolent and Mutual Defence Society—which was very ably responded to by Mr. PETER TAYLOR, and also Mr. T. GREAVES, who said:

I have been very much pleased with what has fallen from Mr. Fleming this afternoon, and from Mr. Peter Taylor this evening, upon the subject, and in responding to the toast I have great pleasure in announcing that both the National Benevolent and Defence Societies are progressing favourably; we have about 150 members, our Benevolent Fund at the bank at this moment is £1,244 16s. 5d., that in the Defence Fund is £71 6s. 2d. During this year we have taken from the Defence Fund £400, and placed it in the Benevolent Fund according to our rules; we did the same thing in 1875. We have paid within the last twelve months £84 15s. 2d. out of the Defence Fund, the legal expenses for a trial at Leeds; we have paid out of the Benevolent Fund £10 towards the expenses of schooling for the two orphan girls of the late Mr. George Brown, a gentleman whose memory is respected by us all; during this year we have received a bequest of £52 3s. 4d. from the late respected Mr. William Field. Miss Dick has promised us £100 at

her death, and I know others who have not forgotten this fund, a fund which I hesitate not to say will afford a greater conscientious pleasure to those who contribute when we come to lie upon our death-bed than any other mode of leaving our surplus capital. I know and feel that this act will tend in some degree to relieve the want and sorrow of some poor widow and orphans of our deserving professional brother. I particularly wish to call the attention of every benevolent man to this matter. As to the defence portion, there is scarcely a week that passes in which we are not consulted on some unreasonable or unjust case or other. The experience your officers have had during the fourteen years of our existence has led us to the conclusion that in almost every case it is far preferable that an effort should be made to settle the case out of court ; we could illustrate this by several cases where we have made bold to investigate the case, and by approaching the opposite party we have found him as ready to settle it as we could desire, and have settled it greatly in the interests of the Society. We could give illustrations of other cases where such a course was not pursued, and where we had to pay dear for it. I ask every member of our profession to come and join us.

SAM. LOCKE, *Hon. Sec.*

ROYAL (DICK'S) VETERINARY COLLEGE.

ON October 22nd the winter session of the Royal (Dick's) Veterinary College was opened with an introductory lecture by Principal Walley, in the theatre of the College, Clyde Street. There was a large attendance of veterinary surgeons and medical men, as well as town councillors and other gentlemen. The Lord Provost occupied the chair.

The LORD PROVOST said he had great pleasure in seeing such a large assemblage present. Several apologies had been received, including one from Sir James Gardiner Baird, who took great interest in the prosperity of the College, and also from Miss Dick. He was glad to think that, as years went on, the prosperity of the institution continued to be very considerable. Three years ago there were about 40 students ; two years ago, 50 ; and last year there were about 80 in attendance. There were indications that this session there would be a corresponding increase. It was gratifying to know that very great improvements had been recently made in the premises of the College. They were now fully occupied, and adapted in every way for carrying out the work of the College. The grand feature of it, however, was that the professors worked so harmoniously together, and that so much energy pervaded every one of them. Such a state of matters was conducive to the conducting of the College in a way that would give satisfaction to all parties connected with it.

Professor WALLEY, who was received with loud applause, said that the College had been going on last year very quietly, but he trusted not without something good to show. Their staff remained as it was with one exception —namely, that Professor J. B. Balfour had been elevated to the post of Professor of Botany in the University of Glasgow. After referring to an alteration in the bye-laws, by which a student might now go up as often as he liked for any one of the examinations, he proceeded to speak of the Act which had recently come into operation for the suppression and prevention of contagious diseases amongst animals. That it has succeeding in circumscribing the spread of Pleuro-pneumonia and Foot-and-Mouth Disease there was ample evidence ; and he looked forward to still greater benefits from its operation. In spite of the prolonged and intense cold of last winter, and the uncongenial and trying weather which had since prevailed, animals had never been, in this particular, so universally healthy. In regard to legislation with reference to diseases amongst animals, he said : " Legislation in these matters would

seem to advance at a slow pace, and in spite of the representations of practical veterinary surgeons, several diseases of an important character are left ought by sight and out of mind so far as interference by the State sanitary authorities is concerned. Foremost and most important of these neglected plagues is Rabies in the dog—the progenitor of the horrible affection known as Hydrophobia in man. Surely if it is found necessary to suppress diseases which are only indirectly injurious to man, it is infinitely more necessary to adopt vigorous measures for the suppression and prevention of such a dreadful affection as Rabies—directly destructive to man, and the most painful and terrifying in its nature of all known maladies—properties which are rendered more alarming from the fact that, so far, no measures have been discovered capable of combating its effects or relieving the sufferings to which it gives rise. There is no doubt that a difficulty exists in the adoption of radical suppressive measures to this particular malady which does not exist in the case of any other to which animals are liable—I mean the sentimental difficulty. Dogs of all animals are the most intimately connected with man, often, indeed, man's only companions and truest friends and helpers ; consequently, any severe measures which might be applied to this animal would be jealously criticised and largely condemned by the dog-loving portion of the community, especially by the ladies. Nevertheless, I must emphatically declare—and I do not stand alone in the declaration—that the deaths of the majority of those of our fellow-creatures who succumb to this dire malady are preventible deaths. One great good arising out of the Act of 1878 is the framing and issuing of the Dairies and Milk-shops Order. It is a measure which was sorely needed, and, if properly carried out, must be productive of incalculable good. To a great extent its provisions were in prior force in Edinburgh, as under the Municipal Acts the magistrates had the power to insist upon due attention being paid to the sanitary arrangements connected with byres ; and this power was used, two periodical visits having being paid by the market inspector and myself to almost every public byre in the city before the order was issued. To the condition of some of the byres, as found by us in our first visit, the term sanitary could not be applied. They were pre-eminently insanitary, and in some cases were scarcely fit to be inhabited by pigs, let alone animals upon which a large portion of the community depend for a supply of a wholesome and nourishing beverage. On our second visit, however, we found that the instructions given by us for the improvement of insanitary byres had, in many instances, been faithfully attended to ; in a few cases, however, from a combination of prejudice, indolence, and occasionally of obstinacy, these instructions had been ignored, the result being that shortcomings in this respect were endorsed in the applications for licenses, so that the local authority had the power of dealing with the recalcitrant applicants as they appeared before them. The good effect of this proceeding, as shown by over a third visit paid during the past week has been striking. The provision of the new order to the effect that pigs or other animals shall not be kept in byres is an admirable one, and it is a marvel to me that it has not been put in force before. In one of the clauses of the order it is stated that milk from diseased animals must not be mixed with that which is intended for consumption. The provision is a very necessary one, but who is to enforce it ? Every respectable cowfeeder will, for the sake of his own reputation, take care that none but healthy milk shall leave his premises for the purposes of human consumption ; but even in the case of these careful and conscientious men, it occasionally happens that prejudicial reports are circulated as to the quality of their milk, these reports emanating occasionally from remarks made by doctors, and at other times from maliciously disposed persons. While it is true that the great body of dairymen will not stultify themselves by adding the milk of unhealthy to that of

healthy cows for the purposes of increasing their gains, it is equally true that a certain proportion will not allow their consciences to dictate to them as to what is the right course to follow when they have one or more diseased animals in their stock. It will, of course, occasionally happen that a proprietor is quite ignorant of the existence of any disease which may render the milk noxious, and this, unfortunately, is particularly true in reference to that insidious affection Consumption. On the other hand, in some instances, as long as an animal will give an appreciable quantity of milk, it is added to the daily yield, and the particular cow will be kept tenaciously in the stock, to scatter daily a poisonous product amongst that particular section of the public which happens to inhabit the immediate district in which she is located. That milk from diseased animals is frequently the means of inflicting irreparable injury, especially in children, there cannot be the slightest doubt ; and I, for one, had a bitter experience of the fact during the first few weeks of my residence in this city. Now, the question arises—What is to be done where diseased animals are found in public byres ? The local authority has not the power to order their destruction, and the most vigilant system of inspection will not prevent the admixture of the milk—small though it must necessarily be in quantity in most instances—with the daily yield, if the dairyman determines upon defying the authorities. In the case of Consumption, I am decidedly of opinion that animals so suffering—or even if reasonably suspected of being the subjects of the disease—should be immediately slaughtered ; and if it is found after slaughter that the disease was not Consumption, but something of a curable nature, compensation should be made to the owner. As to the officers who should be selected for the carrying out of the order, I think that there can be no question that, at least, one thoroughly qualified veterinary surgeon should be employed in each district, with competent assistants as it is found necessary. It is rather amusing to find that in one or two instances medical men have proclaimed themselves as the only competent persons to carry out the provisions of the order ; but, be it said to their honour, in other instances—notably in the case of the North-Western Association of Medical Officers of Health—medical men have declared that the duty can only be efficiently performed by veterinary surgeons. There are hundreds, ay, thousands of medical men who know no more about animals than animals know about them ; and I fancy I see the effect if Dr. Brown, passing from a cowshed, redolent of its perfume, to the elegant boudoir of Lady Smith ; and I still further picture to myself the same Dr. Brown walking into a byre to determine the nature of a disease from which a cow happened to be suffering at the time of his inspection. It may be some considerable time before the Dairies and Cowsheds Order is properly enforced ; and if the views entertained of its purposes by some of the local authorities are carried out, dairymen will have to increase the price of milk in order to leave any margin for profit. Cleanliness, proper ventilation, and light for the cows by all means, but they may be carried too far, especially so where we see thousands of our fellow-creatures huddled together often in the precincts of fine cowsheds—in holes absolutely unfit for the residence of pigs. Associated closely with the dairies, we have the Milkshops Order, an order not promulgated before it was required. No natural fluid with which we are acquainted possesses the same marvellous power of absorption as does milk, and as on many occasions outbreaks of Typhoid Fever have been traced to its agency, some members of the medical profession have endeavoured to trace other diseases to this source, and in their anxiety to do so, one or two, at least, have not scrupled to attempt to brand our own profession with ignorance and incapacity. Fortunately, however, the attempt has failed, and they have thereby loudly proclaimed their own ignorance. That the carrying out of the Milkshops Order should be under the superin-

tendence of medical men there can be no doubt, as they are in the best position to detect and to know of the existence of zymotic diseases in the families of the shopkeepers. Perhaps in no place was this order more required than in Edinburgh and its environs, as in numbers of instances I have seen the open milk pans arranged on benches on one side of a room which was also used as a bed-room, sitting-room, and kitchen combined; and I have even heard that on one occasion a gentleman residing at one of our fashionable watering-places for the summer, was horrified to find that the milk which he had been using had been kept from day to day under the bed! I think, then, that we must all rejoice that an order regulating the sale of milk has been put in force; and we must also be gratified to find that in another division of sanitary science—viz., the inspection of meat—much activity, looking at the immense quantities of meat and fish which have been recently seized and destroyed, has been displayed. Only those who have seen behind the scenes can form any idea of the abominable materials which are sometimes worked up into all kinds of attractive forms for human food. Picture in your own minds a clean-looking butcher's establishment in which are exposed for sale different kinds of sausages, polonies, and other attractive compounds; descend through a trap-door in the floor into the manufactory of these delicacies, and behold a tolerable-sized iron boiler built into the chimney recess, containing a mixture of pork and mutton, recently boiled, in a half-putrid condition, with pieces of rancid ham, beef, and bacon lying about on dirty benches awaiting their turn to be boiled; a dirty bed in one corner, filthy stockings hanging on pegs, tubs of stinking grease, and sausage and mincing machines beplastered with the accumulations of generations of sausages and polonies. This, fortunately, is not an everyday occurrence, but I have witnessed it in this city; and in one instance something even worse than this. Infinitely would I prefer black puddings made up with horse blood—as I know to have been done in one town at least in England—and good nourishing horse-beef for our poor, than such vile compositions as I have described. Exposed in public market and in the abattoirs we sometimes see meat from animals which have suffered from the most repulsive affections, and none but those engaged in the detection of such stuff can form the slightest idea of the very accommodating opinions held by vendors of its fitness for human consumption. We must all, too, have been alarmed at the various reports which have appeared at different times of the existence of trichinæ in American pork, and it is somewhat surprising that the sanitary authorities have not instituted searching microscopical examinations, in a methodical manner, of cargoes of pork landed at the different ports from America. Probably when one or two outbreaks of Trichiniasis occur amongst us this will be done." Professor Walley then referred to the subject of cruelty to animals, and alluded to the dishorning of cattle. He said: "Several objections were urged against the substitute for dishorning which I have supported—viz., knobbing—the most prominent objection being that the knobs were sometimes broken and lost. Now, it occurred to me that indiarubber caps, secured by the aid of copper rivets, would be an admirable substitute. On mentioning the matter to Mr. Cunningham, of the Victoria Rubber Works, he suggested that the caps could be secured either by cement or by copper wire—first nicking the horns with a file if the latter were used—thus doing away with any boring of the horn, or anything else which could possibly give pain. Unfortunately the recent fires in Messrs. Cunningham's works prevented our carrying out the idea in time to show it to you practically to-day, but I think the simplicity and perfect adaptability of the plan must be patent to all: the cost will be a mere trifle, and I do not hesitate to say that those who practise dishorning with such a substitute available will be guilty of malicious cruelty, and will deserve the severest

condemnation at the hands of all lovers of animals." He next dwelt on the cruelty of the present system of slaughtering cattle, and hefting of the udder for the purpose of making the animals have a good show of milk. In speaking of the present agricultural depression, he said: "It is not in my province, neither is it my purpose, to enter into a dissertation as to the causes of agricultural depression or the remedies therefore, further than to refer briefly to one remedy which has been suggested as a panacea—viz., increased production. I have already drawn attention to this matter elsewhere, and have struck a warning note against the indiscriminate and unscientific use to which this advice is likely to be put by some farmers. Increased production cannot take place without the increased use of manures and allied substances; and I, with others, have no difficulty in proving that the excessive use of artificial manures is a prolific source of blood disease in, and constitutional deterioration of, animals. Artificially over-forced herbage does not possess the materials necessary for the building up of the tissues of animals and giving them sound constitutions; neither does it of itself possess that amount of stamina which it should do in order to render it profitable. Moreover, Professor Lawes has shown that beyond a certain point, stimulation of crops means absolute loss and disappointment. Large doses of artificial and small doses of natural manures have the same effect on plants as large doses of whisky with small supplies of solid food have upon man, and it seems to be entirely forgotten by some that the greater the amount expended upon a crop the greater the consequent loss if the crop fails. One thing has struck me very forcibly with reference to natural manure—viz., that many pounds' worth of nutritive matter must be annually lost to the farmer by the absolute waste of liquid which takes place from the great majority of midden-steads, and by the evolution of ammonia in allowing the manure to lie too long in heaps before it is ploughed into the land. In spite of the present gloomy outlook, I have too much faith in the inherent vitality of British agriculture, and in the perseverance and energy of the British farmer, to believe that the prevailing distress is permanent. Agriculturists have rallied from losses much greater, though, perhaps, not so prolonged, than the present—as witness their wonderful recuperation after the decimating scourge of Rinderpest, and the repeated ravages of Pleuro-pneumonia, Foot-and-Mouth Disease, and Sheep-rot; and they will rally again, though many will emerge from the struggle sadder and poorer, but, let us trust, wiser and more hopeful men." He concluded by giving some practical advice to the students.

The LORD PROVOST called upon Dr. Donaldson, who had examined the students in their general education, to address the meeting.

Dr. DONALDSON said that he had had for a considerable time the opportunity of examining the students, and his opinion of them rose each year. This year the examination had been a very satisfactory one indeed. In his intercourse with Professor Walley, he had become more and more impressed with the fact that he was a thorough, straightforward, honest, and upright man, and the community would not do justice to themselves if the numbers at the College did not increase.

On the motion of Major-General ANDERSON, C.B., a vote of thanks was given to the Lord Provost; and the proceedings terminated.

GLASGOW VETERINARY COLLEGE.

THE winter session of the Glasgow Veterinary College was opened on October 2nd, Professor Knox delivering the inaugural address. The chair was occupied by Dr. Adams, and among others present were Sheriff Clark, Rev. Dr. Johnson, Cambuslang; Rev. Mr. Storrie, Carmunnock; Rev. Mr.

Watson, Glasgow ; Mr. Graham, Lambhill ; Mr. Turnbull, Lambhill ; Mr. Robertson, Glasgow ; and representatives of the veterinary profession from Inverness, Aberdeen, Perth, Stirling, and intermediate towns.

Professor KNOX began his address by stating his ideal of the veterinary profession. "I have a very high ideal," he said, "of what the veterinary profession ought to be, and of the respect its members ought to obtain, not only from the holders of stock in this country, but from all classes of the community. When I think of what vast interests will one day be committed to your charge—that, for instance, one great department of preventive or State medicine—the food supply of the people—will almost entirely be under your supervision, and the lives, therefore, of the lieges at your mercy ; that you will be the chief cultivators of that boundless field of comparative pathology and the chief exponents of its hidden treasures ; that it is to your researches the physician looks for the clue to guide him in his investigations into the natural history and rational treatment of such diseases as Rabies or Hydrophobia, Glanders, Tubercle, and many others which, to conceal his ignorance, he is content at present to term specific ; that it is from researches and experiments in comparative therapeutics the medical practitioner is anxiously awaiting additions to those means by which he is further to relieve human suffering and prolong human life ; nay, more, when I consider what is to be your daily and livelong task—to interpret the wants of the great brute creation ; to divine, as it were, the significance of its groans ; to relieve its unexpressed pains, and to give a voice to its hitherto too often unheeded sufferings, I feel that your profession is a most noble one, and that its members ought to be the most highly gifted and the most perfectly trained of our scientific men. But, gentlemen, I am sorry to confess that I feel at the same time that as yet we have advanced but a very short way to the realisation of this ideal. Perhaps the blame lies with others as well as with ourselves. Indeed, seeing how necessary highly-educated veterinary surgeons are to the welfare of the general public, I am sure there are many here who, like myself, cannot conceal our astonishment that so little has been done for the profession by the State or by the outside public. We have all seen the public money lavishly squandered even by the most stingy of Governments, and that too upon objects bearing perhaps even less directly upon the public weal. Wherever man's life, or his power of doing work, for the State at least, are so openly menaced by hardship, or hunger, or disease, that the danger can't be overlooked, but is seen by everybody, Royal Commissioners proceed to investigate into it, the whole machinery of Parliament is set in motion to remedy it, and money is forthcoming in abundance. But let the danger be but ever so slightly veiled, either from its own intrinsic nature or from the ignorance of observers, no matter how insidious its progress may be, or how widespread its ravages, how slow we are to remedy it, or the remedy takes the form of a mere temporary expedient. When, for instance, an epidemic of Hydrophobia occurs, as it did two years ago in Glasgow, lengthy proclamations are issued by the terror-stricken magistrates, much money is spent, much labour is required, many men are employed, and all for what? —to catch and drown a few stray curs. Now, allow me to ask, was that a scientific proceeding worthy of a large and wealthy corporation? Again, certain diseases break out among our cattle. A cry goes up, whether well or ill-founded I say not, that it is from other lands these diseases come ; and in answer to this clamour, by Act of Parliament foreign animals' wharves, with slaughter-houses and their appurtenances, are at once erected at our seaports, and the fiat goes forth that no cattle or sheep, however free from disease they may be, provided only they hail from a foreign shore, shall be turned loose to graze in our fields or be recruited after a long voyage before being converted into food for the people. Again I ask, Is this a scientific

method of procedure? Surely not. It may be expedient in the present lamentable state of ignorance, but of itself it is a confession of ignorance, of fear, and perhaps even of self-interest on the part of a few. But in my humble opinion it is beginning at the wrong end. Would it not be better, and wiser too, to spend money on the investigation of the causes, the natural history, and the results of these diseases, their modes of propagation, their limitation, and their treatment; to find out how much perhaps our inhuman methods of housing animals and conveying them on board ship from one port to another, our inattention to ventilation, and our wretched systems of drainage, are responsible for the origin and spread of contagious diseases? Would it not, in a word, be far wiser to devote some part of our means to the proper educating of scientific veterinary practitioners, to put the best means of study and research within their reach, and to endow them with laboratories and apparatus for the proper carrying out of their investigations? There is a good old Latin motto, *Fas est ab hoste doceri*, and in this respect we have much to learn from our Continental rivals. We have splendid examples both in France and Germany of what may be done by Government, guided by an enlightened public spirit. The veterinary surgeons here present know full well the immense obligations the profession lies under to France, which may almost be called the birthplace of the veterinary art. But we owe France a still greater debt of gratitude for showing us a college like that at Alfort, so munificently equipped and endowed, and the *alma mater* of the best educated and most scientific race of veterinarians the world has yet seen. Why should Continental nations take the lead in this respect? They have no greater interest at stake than we have, and they have not the wealth we have wherewith to carry out their plans. The only institution in this country in which comparative pathology is made a specialty is the Brown Institute in London, and for that we are indebted to private beneficence. The work done there and the instruction afforded to its students are simply invaluable. But this solitary and very small school is manifestly inadequate for a great and rich country like ours, with such a valuable breed of horses and such immense herds of cattle and flocks of sheep. Why should not every veterinary college in the country have attached to them similar laboratories to those of the Brown Institute, and be presided over by men, if not of the calibre, at least with something of the spirit of its superintendent, Professor Burdon-Sanderson. Why should, let me ask again, the very elements of education in the primary schools of the country, and Latin and Greek, mathematics and philosophy, in the universities, not to speak of the professions of law, divinity, and medicine, receive such largesses from the public funds? I may tell you that the two Universities of Glasgow and Edinburgh alone have within the last few years received about £200,000 from Government, while the veterinary profession and its colleges are still left out in the cold. But it is not only money that we want, we want also superintendence, guidance, and in fact, much the same treatment that the medical profession has received. We would be a great deal the better, I think, for a Commission to investigate our position, the means to be adopted both for teaching and examining students, the regulation of the years of study and of the examinations, from the preliminary examination in education to the final proficiency. The veterinary colleges might, even in Scotland, at least be connected in some way with the medical faculties of the universities, as indeed the Brown Institute is already connected with the University of London. This was a frequently expressed wish of a very good friend and patron of this College, I mean Professor Allen Thomson, and no one can doubt but that it would be an alliance fraught with advantage to both parties and professions. It is certainly a point to be steadily kept in view." In concluding his address, Dr. Knox mentioned that an extension of

the school in Buccleuch Street is in contemplation for next year. "You are all aware," he said, "that at the present moment the farmers of this country generally are in a sad way—they are being ruined, they say, by the inclement weather, bad harvests, and foreign competition. A Royal Commission has been appointed to inquire into their case, and see what can be done for them. It will be some time, however, before Government can come to anything like a definite opinion on the subject, or much, if anything, can be done; and meanwhile, acting on the principle that God helps those who help themselves, Principal M'Call has determined to open a department for the teaching of agriculture in connection with this school. We in Scotland have always been famous for our methods of farming, just as we have been for our parish schools. But we have found out recently that in regard to the latter improvements were not only possible but absolutely necessary, and so it may be as regards farming. At all events, the present seems a highly favourable opportunity for inaugurating a course of instruction, both theoretical and practical, for the younger generation of farmers. In these days of high farming it will prove a great boon to many young men in a short course of lectures and demonstrations to be put at once in possession of the most essential information as regards the nature of soils, the proper food of plants, and the best methods of cultivation, with the results of the most recent experiments on these subjects. Lectures on all these subjects, illustrated by experiments, will be delivered in the College, and the farm at Flemington will be placed in connection with the department. This farm is quite a model one. It contains 460 acres of land. In its byres are at present over 100 cows, and on its pastures between 300 and 400 sheep. All manner of crops are grown on the best and most improved methods. Steam machinery and implements of the most expensive description are employed, and no necessary expense is spared to bring the land and the animals upon it to the highest state of cultivation and breeding. I look forward to immense practical benefits being conferred upon the community at large, as well as upon our future generations of farmers by this school of instruction."

At the close of the address a cordial vote of thanks was passed to Dr. Knox, on the motion of the CHAIRMAN; and on the motion of Principal M'CALL a similar compliment was paid to Dr. Adams for presiding.

NEW VETERINARY COLLEGE, GAYFIELD.

THE opening lecture of the winter session of the New Veterinary College, Gayfield, was delivered on October 22nd, in the theatre of the College by Professor Vaughan, F.L.S. There was a large attendance of students, and members of the medical and veterinary profession.

On the motion of Principal WILLIAMS, Mr. Woods, Fellow of the Royal College of Veterinary Surgeons, Wigan, was called to the chair, who briefly introduced the lecturer.

Professor VAUGHAN said it was now about six years since the late Sir Alexander Gibson-Maitland delivered the first opening address in this College, under auspices which the most sanguine amongst them could hardly look upon as very favourable. Those, indeed, there were who exercised the vocation of the prophet in a way that did not reflect very well upon their prospects. He did not wish to speak of himself, but his own total failure in this College was looked upon as the nucleus of a general collapse. That collapse did not take place, nor yet the failure, and he was thankful to say that they had progressed as well, in fact far better, than could have been expected. Referring to the question of preliminary education, he said it was no matter what the length or the nature of the college curriculum was, if they had not the material to work upon. The value of

preliminary education was sufficiently obvious on reflection. It might be said, What did the practitioner want to know about Latin, Greek, mathematics, or the abstract sciences generally? That was, to say the least of it, an ignorant question, since education of any kind expanded the mind. And what was the use of that? It rendered the mind able to grasp the subject, and not to absorb it like a sponge. It was frequently pointed out to them, sometimes politely and sometimes very impolitely, that all the veterinary science they had came from the Continent, and the claims of the Continent had certainly been immense. Veterinary colleges were more numerous on the Continent than in Great Britain, and perhaps better conducted; but the reason was that all the colleges on the Continent were supported by their respective Governments. They wanted Government support badly—that was to say, they wanted a little money. But there was one thing connected with Government support that he hoped Providence in its great mercy would keep them from, and that was bringing their colleges under Government control, and binding them together with red tape. But in speaking of the veterinary science of the Continent, there was a British veterinary science which should not be ignored. There was a strong tinge of the sportsman about the veterinary profession in Great Britain, and it was not detrimental to it. He hoped the time would never come when their field sports would be things of the past. This one thing ought to be remembered, their ordinary veterinary science had become more popular in England than in any other part of the world, simply because there were more sportsmen. But beyond all this, they had had scientific men who could hold their own with those veterinary authorities of the Continent so often spoken of. Percivall, and other authors, were quoted by Continental writers, so that if they had received all their science from the Continent, at any rate they had sent a little back again.

At the close a vote of thanks was accorded to Professor Vaughan for his address, on the motion of Mr. CONNACHIE, and a similar compliment was paid to the chairman, on the motion of Dr. DYCER.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THIS Association held its first meeting for the session 1879-80, on October 9th, in the lecture-room of the College. Principal Dr. McEachran was in the chair, with a full attendance of members. In his opening address the President briefly reviewed the past history of the Association since its formation in 1875. It was very gratifying to notice the continued and increasing interest evinced by the members in the meetings. He directed the attention of the younger members to the great benefit they would derive from their connection with the Association. The papers read, being always most interesting, and frequently on subjects not fully treated upon in the regular curriculum, were of great advantage to them all. The library, containing as it did nearly 300 volumes, and many of them rare and valuable works, was always at their disposal. It afforded him great pleasure to be able to inform them that its numbers were constantly being increased by donations from friends of the Association. Several volumes had recently been received from Dr. Fenwick, Dr. Liautard, and Dr. C. C. Lyford. In conclusion, he would state that the success of the Association had exceeded his most sanguine expectations, and he would urge upon the members the necessity of continued exertion to maintain its reputation.

The officers of the Association are—Dr. McEachran, F.R.C.V.S., Honorary President; Wm. Osler, M.D., L.R.C.P.L., President; C. J. Alloway, V.S., 1st Vice-President; Jas. Bell, M.D., 2nd Vice-President; M. S. Brown, Secretary and Treasurer; and Wm. Jakeman, Librarian.

A vote of thanks was proposed and carried unanimously, to Drs. Fenwick, Liautard, and Lyford, for their kind donations to the library.

The following gentlemen were proposed for membership :—F. Torrance, Compton, P.Q. ; A. J. Chandler, Coaticook, P.Q. ; Messrs. Thomas and Skully, Boston, Mass. ; Mr. Dunden, Salem, N.Y. ; A. Glass, Philadelphia, Penn. ; W. Wardle, Montreal, Que.

At the next meeting (Oct. 23rd inst.) Principal McEachran was to read a paper on contagious Pleuro-pneumonia, a subject that at the present time is one of especial interest, not only to the members of the profession, but to all that are connected with the breeding and exportation of cattle ; and Mr. M. S. Brown was to communicate a case.

Army Veterinary Department.

Gazette, October 31st.

VETERINARY DEPARTMENT.—Veterinary Surgeon M. F. Healy, Royal Artillery, to be Veterinary Surgeon, First Class.

Gazette, November 14th.

21ST HUSSARS.—Veterinary Surgeon, First Class, J. G. Bushman is placed on temporary half-pay on account of ill-health.

VETERINARY DEPARTMENT.—The promotion of Veterinary Surgeon, First Class, G. Fleming, from the 2nd Life-Guards to the rank of Inspecting Veterinary Surgeon, is post-dated to August 19th, 1879. Veterinary Surgeon W. Boyd, Royal Artillery, to be Veterinary Surgeon, First Class.

India Office, November 11th.

Veterinary Surgeon M. J. Marshall, of the Bengal Army, retires from the service. The following appointments have been ordered in India :—Principal Veterinary Surgeon F. F. Collins is appointed to the administrative veterinary charge of the Jellalabad Field-Force ; and First Class Veterinary Surgeon G. A. Oliphant to the same duty with the Cabul Field Force, with the temporary rank of Inspecting Veterinary Surgeon.

Now that the campaign in Zululand is terminated, we find that the Veterinary Department is mentioned in the highest terms in connection with it, those who held superior commands, from Lord Chelmsford downwards, all speaking in praise of the great services rendered by their veterinary surgeons, and the important influence these services had upon the success of the war. Not only does the Department as a whole receive well-deserved encomiums, but individual members are selected for special commendation. We are much gratified to find that H.R.H. the Field-Marshal Commanding-in-Chief has desired his acknowledgments to be made to Veterinary Surgeons Glover and Duck, and the last-named gentleman is selected for mention in the final despatch of Colonel Redvers Buller, V.C., C.B., commanding the mounted corps of the flying column which did such excellent service against the Kaffirs, Secoconi, and lastly against the Zulus. The despatch (dated July 5th), which is published in the *Gazette* for August last, says : "Veterinary Surgeon Duck, Royal Artillery, has been attached to the Frontier Light Horse for twelve months, and has had charge of the horses of all mounted corps. We have to thank his skill and unremitting attention for their efficiency. Mr. Duck has also accompanied the troops on all large patrols, and has frequently rendered me great assistance in action." On a

previous occasion he was reported by the same distinguished officer, not only for his professional skill, but also for his gallantry in presence of the enemy, and particularly during the retreat from the disastrous defeat at the Hlobana mountain on March 28th, when, taking a dead man's rifle, he volunteered his services in the rear-guard, and rendered excellent service at a most critical moment.

It is earnestly hoped that the recognition which has been so freely accorded in the field may not—as it has always been hitherto—denied our colleagues by the higher authorities at home. Of all the departments in the Army, the Veterinary is that which is most studiously ignored and most ungenerously treated by those who are in power at the Horse-Guards. Such ill-deserved treatment is, to say the least of it, short-sighted, and we are certain that the country would not tolerate it for an hour, did it only know the state of affairs.

Obituary.

WE regret to have to announce the death, on October 27th, at Shorncliffe, of First Class J. Mills, Army Veterinary Department, and late of the 18th Hussars. Mr. Mills graduated in 1867.

The demise is also reported from India, of First Class Veterinary Surgeon A. E. Clark, Royal Artillery, on October 23rd, of Pulmonary Apoplexy. He received his diploma in 1857.

Mr. W. B. Taylor, of Auston, Rotherham, died on September 20th, aged fifty-one years ; and Mr. W. Hamley, Bodmin, Penzance, died on the 9th of that month. The former graduated in 1853, and the latter in 1868.

With much sorrow we received the news of the death of Mr. John Sherriff, of Calcutta, who received the diploma of the Royal College in 1871, but had been a certificate holder of the Highland Society since 1854. In that year he went to India, and soon became proprietor of the firm of Messrs. Hunter and Co., Calcutta, where for a long time he conducted a prosperous business. He died in Australia on September 13th, and the following friendly notice of the mournful event appeared in the *Melbourne Leader* :—" Mr. Sheriff resided in India for twenty-five years, and was well known by all the shippers and breeders of horses throughout the Australian colonies, whose business he transacted for many years with entire satisfaction to his clients. Those who now proceed to India will miss in the late Mr. Sheriff a kind friend, whose genial smile, open hand and heart enabled many importers of horses to tide over difficulties they had to meet with in a climate like India. He kept open house to all who chose to share his hospitality, and when any European was sick would tend them with a mother's care. As a veterinary surgeon he stood at the top of his profession, his opinion being universally relied upon. At last domestic bereavement and failing health compelled him to come to Australia, where he died."

Notes and News.

THE IMMUNITY OF ALGERIAN SHEEP FROM ANTHRAX.—A very interesting memoir has lately been presented to the Academy of Sciences by M. Chauveau, of Lyons, on the influence of the breed of sheep, or of the source whence they are obtained, on their liability to contract Splenic Apoplexy. Just at present large numbers of sheep imported from Algeria are met with in the Lyons market, all of them belonging to the so-called Barbary breed, either pure, or more or less crossed with the large-tailed Syrian race. At various

times M. Chauveau bought nine of these sheep, and inoculated them with the *charbon*. None of them contracted the specific disease, all alike resisting the infection. This immunity was not assumed from the results of one inoculation alone. In the case of one animal it was repeated five times, and in nearly all the others at least three times. In every instance the infectious matter was carefully selected, and skilfully introduced by various methods of inoculation. While these Algerian sheep without exception resisted repeated inoculation, rabbits and native sheep, submitted to a like test, contracted the infection at the very first operation. Hence M. Chauveau believes it may be assumed that the Algerian stock are endowed with the happy immunity from the disease, and that this may be considered as a general characteristic of the whole breed, and not an accidental occurrence in a few individuals only. This latter point could soon be determined by a more extended system of inoculation. The importance of the question can scarcely be over-rated. If their immunity be characteristic of the breed, it is most desirable to establish the fact, both from the point of view of the special applications which might be made of a knowledge of their peculiarity, and with respect to the general scientific conclusions which might be drawn from it. If, on the other hand, the immunity be acquired, it is still more important to know it, so as to arrive at the determination of the conditions which prevent the prolification of the Bacteria of *charbon* in the sheep. The discovery of these conditions would be an immense benefit to agricultural interests, rendering it possible to create immunity from the disease at will, since there is every reason to believe that they are of a nature to be induced experimentally. Professor Chauveau intimates his intention to continue his investigations on this important subject.

INSTINCT OF HORSES.—There is a remarkable exemplification of instinct in horses, which may or may not be peculiar to horses bred in the pampas, but which I have never seen in print. It is the wonderful manner in which horses, taken away from their birthplace, will return as soon as they regain their liberty. I have known horses return two or three hundred miles, swimming rivers, and overcoming every obstacle. It matters not if they be taken away at night, or by a circuitous route, they will find their way back, not indeed by the circuitous way they may have come, but in a direct line. It always appeared to me a marvellous instinct which could guide them so unerringly over such long distances, over immense open plains, with scarcely a landmark to assist them. This instinct, though common to all horses that are taken from one breeding-ground to another, is, however, much stronger in some than in others. For instance, horses reared on rich pasture have the instinct much stronger, or at least they retain it much longer, than those reared on poorer lands. Those bred in the districts of the Montes Grandes, where the grasses are especially luxuriant, scarcely ever lose this home-pining ; and though they are the finest-looking horses in the republic, they are of little value to farmers, as it is next to impossible to keep them from straying. As hacks, in the city of Buenos Ayres they soon lose this instinct, probably owing to total change of diet and the comforts of a stable. A very marked exception to this instinct is to be found in the *Bagual*—strictly speaking the wild horse of the pampas, as distinguished from his domesticated or semi-wild brethren of the settled districts. The *Bagual*, when captured, tamed, and taken to the settled districts, seems to lose this instinct entirely. He has also another very singular peculiarity—the transformation from a wild to a domesticated state causes him to lose his gregarious habits. He will stray away here, there, and everywhere, but seldom will he associate with other horses, and never with the same for any length of time. This horse is popularly supposed never to become thoroughly confidential for riding, being, it is said, apt to

buck-jump and plunge when least expected. I, however, had one for five or six years. He was very quiet and steady, and a good, useful horse for general purposes. He would not have the head-collar at any price, but would stand saddled loose all day long with the reins put behind the stirrup leathers.—*Live Stock Journal.*

RABIES IN SHEEP.—The *Landwirth* records an outbreak of Rabies in a flock on the Pohlschildern estate, in the district of Liegnitz, during July of last year, consequent on some of the sheep having been bitten by two rabid dogs on the same property. Within eight weeks about thirty of the sheep fell victims to the disease. No fresh cases having occurred for a very considerable time, it was concluded that all danger was passed, until, on September 12th of the *present year*, undoubted Rabies again appeared in the same flock. The nature of the outbreak is positively confirmed by the official veterinary surgeon of the district, and, in the absence of any other explanation of its origin, it must be referred back to the accident of July, 1878. If this hypothesis be correct, the disease must have remained latent for upwards of fourteen months before making itself manifest.

RABIES IN ENGLAND.—Several outbreaks of Rabies have occurred lately. Cases are reported from Sheffield, and deaths from Hydrophobia. In the West of England the scourge has shown itself among hounds ; and we are informed that not long ago a well-known pack in Cornwall was destroyed from this cause ; and recently two hounds from that county were introduced by the master, Mr. G. A. Bragg, into the kennels of a pack of harriers at Moretonhampstead, on the borders of Dartmoor. The imported hounds soon showed symptoms of Rabies, and after they had bitten several of the harriers, were shot. Ultimately the whole pack had to be destroyed. At Taunton a rabid dog has wounded several people, as well as a number of pigs, one of which has already died of Rabies. In Glasgow a woman has perished from Hydrophobia ; she was bitten by a rabid dog about four months previously. At Preston a boy has also died from this malady—another victim to the bites of the rabid mastiff alluded to in a leading article a short time ago. Rabies is also becoming only too well known in Dublin.

BRUTAL TREATMENT FOR COLIC IN INDIA.—A correspondent to the *Asian* gives the following startling illustration of the treatment of animal diseases among the natives of India. A few days ago a mule belonging to a Bhooteah *sombah* was seized with spasmodic Colic. The attack seemed very seyere, and the natives looking on for a considerable time allowed the poor animal to struggle in its agony. By the advice of a gentleman present, hand-raking was tried by a Bhooteah, and some fæces with flatus evacuated, but not to any great extent. I happened to be near, and thought of relieving the animal with the common mixture of opium, chloroform, and turpentine, but before this breparation became available a Bhooteah *tashoo*, or medicine man, appeared on the scene, and what followed amused and surprised us all very much. Having taken a hair from the mule's tail and threaded a large needle, he opened first the left eye and passed a stitch through the piece of flesh in the inner angle of the eyelids. Drawing it out, he cut off a piece the size of a small pea, which an assistant at once passed up the mule's fundament. A similar operation was performed on the right eye, and the piece removed was deposited in the same curious locality. Then having pulled down the lining membrane of the nostrils, the operator made a slight cut towards the septal side in each, but not sufficient to draw blood. Some prayers were then recited, images of butter were placed on the ground, and congratulatory interchange of *pân* and betel having taken place, the ceremony ended. The animal did not lose altogether more than a drachm of blood. The onlookers not understanding the *rationale* of the whole proceeding were rather surprised to see the mule suddenly revive on receiving

the first cut. He at once commenced to graze, though for twenty minutes or more previously he had been writhing in agony. We naturally spoke of it as a coincidence. The duration of the case, the considerable interval that elapsed between the hand-raking and recovery, and the apparently instantaneous nature of the latter, rendered the coincidence, if it was only such, rather striking. The germ of some truth may perhaps lie hidden beneath the gross absurdity of the formulæ.

THE VALUE OF A DEAD HORSE IN PARIS.—The value of a cab-horse in Paris which, from accident or age, is no longer useful for harness purposes, is estimated at 68 francs, apportioned as follows :—Skin, 13 francs 60 centimes; hair, 1 f. ; blood, 6 f. 30 c. ; nails, 12 c. ; shoes, 1 f. ; viscera, 1 f. 60 c. ; tendons, 30 c. ; intestines, 1 f. ; grease, 4 f. 98 c. ; bones, 2 f. 30 c. ; flesh, 35 f. The ultimate destination of the skin is the tan-pit, the tendons are used for glue, the feet for oil, the bones for animal black, the blood for Prussian blue, while the horse-flesh finds its place as a *piece de résistance* in the cheap restaurants.

Correspondence, etc.

THE ECRASEUR IN CASTRATION.

To the Editor of the VETERINARY JOURNAL.

SIR,—In the number of your widely-circulated Journal for September last, I read with much interest Principal Walley's remarks on "Castration of Cryptorchid Horses, and on Hæmorrhage after Ordinary Castration." In the latter part of his letter he mentions my father as having largely used the ecraseur, and adds that I would give the necessary information about its use to a correspondent. With your permission, and in deference to the worthy professor's wish, I request the insertion in your valuable Journal of the following remarks :—

Having secured the animal by the aid of hobbles and back-strap, on its back, the operation is proceeded with as for castration by the clams—viz., cut through the coverings of the testicle, and expose that organ ; then place over the testicle (and fairly high up the cord) the chain of the ecraseur, tightening it by compressing the springs ; the operator now, when the chain is somewhat tight, works each bar of the instrument alternately—my father always found it best to tighten slowly, to give the chain proper time to crush through the integuments of the cord—and slowly, till he thinks the cord properly and sufficiently crushed. The cord can then be either crushed entirely through, or cut with the scalpel just below the chain. If the latter method is adopted, try to crush the cord a little more. The operation over, the animal may now be released without anything further being necessary.

Now, I can confidently say, from the long experience of my father, and having myself operated with the ecraseur, that it is the safest, best, least troublesome, and most scientific mode of operation. There is no subsequent hæmorrhage (or if so, nothing of any moment), no pain (having seen animals immediately feed on getting to their feet), no swelling, and no subsequent trouble with the removal of clams, etc. I have known many instances where the ecraseur was used in castration for the first time, and the owners subsequently would have no other mode of operation performed, so highly pleased were they with its good results. I have never seen the smallest amount of hæmorrhage, and therefore I would not think there was

any danger from the ecraseur itself, unless the artery was improperly crushed, as I pointed out in the *modus operandi.*

Hoping I have not trespassed too much on the space of your valuable Journal, I am, yours respectfully,

Longford, Ireland, *October 17th*, 1879. ROBERT B. PRENTICE, V.S.

PROFESSIONAL ADVERTISING.

To the Editor of the VETERINARY JOURNAL.

SIR,—On taking up my *Sporting Gazette* yesterday, my eye was attracted by a very conspicuous advertisement of a veterinary surgeon on the front page, and I was truly astonished to find that respectable gentlemen should have to resort to so common a method of "pushing" their business; but my astonishment increased a hundredfold when I came across two others, both of them so very "shoppy" in their style, that I hasten to cut them out and send them to you—not with any personal feeling in the matter, for all the gentlemen mentioned in the advertisements are unknown to me in my business, although two of them reside in the same district of London as myself. Should you think it advisable to bring this sort of thing before the profession, I shall be glad if you will reproduce the advertisements (which I enclose), in your valuable Journal, together with an expression of opinion from yourself on the subject. I am, sir, your faithful servant,

London, *November 10th.* "A WEST END PRACTITIONER."

[Our opinion with regard to this kind of advertising has been only too often expressed, and we regret that we have again to protest against it as unprofessional, and positively injurious, not only to the entire body, but also to the individuals who endeavour to obtain notoriety in this way. We do not publish the advertisements of the gentlemen, sent by our correspondent, as this would be only adding to their publicity, and perhaps assist them in "touting for custom." They perhaps forget that this is the mode adopted by quacks only; medical men never resort to it, except in extremely rare instances, when caste has been lost and professional dignity obliterated.]

TUTORIAL *TOGAS.*

To the Editor of the VETERINARY JOURNAL.

SIR,—Under the title of "Honest Competition" began the agitation on College fees and practice, and I now observe that a new title has been adopted—"Grievances." I, however, have no wish to enter that arena of debate. But I have been much puzzled, Mr. Editor, to understand the *why* and *wherefore* the teachers at the Royal Veterinary College at Camden Town assume the *toga*, and all my friends are in the same fix or fog. We read that the Romans permitted their youth to don the *toga* on entering the fourteenth year, which they termed the *toga virilis*, or "gown of manhood." Surely, sir, in this instance it is not to distinguish the teacher from the taught? In modern times, in this and other European countries, the *toga* is, I believe, only donned by university graduates, members of the bar, and ministers, or those admitted to holy orders. None other, so far as my research goes, lay claim to appear in *toga*, and I fail to find an instance of its assumption by the medical teachers in hospitals.

Is it, then, for the purpose suggested, or from antiquated notions that such a new innovation obtains? or is it to be in strict keeping with the ancients, and the dark ages of Greece and Rome?

I will not say it is absurd, presumptuous, or bordering on quackery; the

costume has doubtless caused many a smile to appear on an opening day on the faces of the noblemen and gentlemen present. Possibly you, Mr. Editor, may show some legal claim or necessity for *toga*, and enlighten

London, *October 1st*, 1879. Yours respectfully, B. A.

[We are under the impression that only those teachers who have taken a university degree are entitled to wear the gown. But it may be that distinctive gowns are allowed to be worn by other corporations than universities —as the Royal College of Physicians. The right to wear a gown—in public at any rate—has always appeared to us to depend upon the possession of a "degree" in the strict sense of the word—*i.e.*, a distinction only granted by a university; or the holding a diploma granted by a body—*e.g.*, barristers—who by custom or special regulations of its own acknowledge the wearing of gowns. Unless as a distinction, the necessity for the gown is not very obvious. In cold weather, and in old age, when the circulation is languid, especially in the extremities, a supplementary article of clothing is undoubtedly useful; the gown might then be designated *toga senilis*. Our correspondent and others who would like to know something of the comic aspect of *toga*-wearing, we refer to the "Adventures of Verdant Green, an Oxford Freshman" (p. 37 *et seq.*). We can merely give one remark of the smirking robe-maker in commenting on V. Green's application for the classical piece of tailor-work: "I think, sir, there is a leetle mistake here. The gentleman will be hinfringing the university statues if he wears a scholar's gown and hasn't got a scholarship; and these robes'll be of no use to the gentleman, yet awhile at least."]

"THE GRIEVANCES."

To the Editor of the VETERINARY JOURNAL.

SIR,—I have lately become absorbed in the present agitation; much so since I read your plain, open-minded Editorial. I feel I should have a word to say on the matter. I knew the College in Sewell's time, and well do I remember Spooner succeeding him. I have heard my friends talk over the College career from Coleman's time, so I am pretty well up in its history.

I talked to Spooner about this "co-operative" or "subscription" business years ago. "Well," he said, in his usual dry way, "to start the college, this system was adopted; and if the practitioners object to it they should speak to the governors. I cannot complain."

The late William Mavor often said, "They make veterinary surgeons at Camden Town, and then starve them." However, change and improvement being the order of the day, I see no reason why we should not mend our ways, and begin at the "fountain head."

I am now going to speak "plain" to the *leading* members. I mean those who are doing a good trade. I was sorry I did not read their names on that "requisition" paper. These men should come forward; they must be independent of the College and its teachers, and above toadying them. I asked a member the other day how it was, and he told me that several of these men said, "Oh, we don't think you will do any good; if we did, we would sign directly." Sad excuse! I am ashamed of them! But although their names are not there, we find others of equal professional value—rising young men, whose brain, not purse, will raise our standard high.

The "system" must be treated like a "festering, unhealthy sore"—probed to the bottom, and the body corporate made healthy and sound.

The Principal of the school must assist or belie his new College motto.

Now, sir, I wish to ask what other system is suggested? It occurs to me that a "Veterinary Senate" would be a good innovation, and that *it* should

select from the body the names of those gentlemen qualified to lecture on various stated subjects, and appoint them to lecture for a term, then re-appoint or elect others. By such a system talent now latent would burn bright, and impetus be given to the members for study and research. The practitioner would then have interests in common with the school. The College should boast of an intelligent Principal, and say two assistants—*i.e.*, hospital surgeon and demonstrator, the remaining officers being selected from the senior students.

I have roughly stated my ideas, and shall be pleased to hear some sensible resolutions brought forward at the special meeting, so that valuable time may be spared.

I hope the College people are bestirring themselves honestly in the matter, as they should and must do, for I have great veneration for the old school at St. Pancras, having passed many days there pleasantly and profitably. No one has a more hearty desire to see it stand in its proper position.

I must now close or trespass too far on your valuable space ; but before I do so, I must say, and boldly too, that I admire the way you have deported yourself, Mr. Editor, in this rather unpleasant agitation. You have again proved yourself to be truly a man of courage, an Englishman who can and will speak his mind when occasion demands without the least semblance of fear. You deserve well of "the civil practitioner," and I wish I could only say as much for the "big pot" London men who are afraid to open their mouths.—I am, etc.,

"AN OLD COCKNEY."

London Suburbs, *November 12th*, 1879.

THE VALUE OF A PROFESSOR'S OPINION ON HALTING AND HOBBLING.

To the Editor of the VETERINARY JOURNAL.

SIR,—In your last number a letter is published signed "Radix" under the above head, which quotes a *Daily Telegraph* report of a case of alleged cruelty, prosecuted recently by this Society, hastily assumes that such report is accurate, and as hastily deduces therefrom certain conclusions which are in reality (whether intended or not) reflections on this Society.

Your correspondent is quite at liberty to regard the newspaper referred to as trustworthy ; but if he be a veterinary surgeon, as the phraseology of his letter implies, he ought to have known that the report in question contained at least one inaccuracy, namely, that Mr. Phillips, who appeared for the defence, is not a veterinary surgeon.

"Radix" assumes that Professor Pritchard and officers of this Society are unable to distinguish between what he calls "Chronic Halt," that is, lameness without inflammation, from lameness with acute inflammation ; but that the magistrate and an unqualified hanger-on to the profession are able to make such distinction. It is not likely that many of your readers will agree with him ; especially when they learn that on the day when the horse was at work and examined by the officer (who has been twenty-six years in the service of this Society,) and when it was examined two or three days later by Professor Pritchard, very prominent and marked suffering was seen and reported to this office, for the animal then could scarcely bear any weight on its lame leg.

"Radix," unlike a loyal member of your profession, apparently rejoices over a victory obtained in a police-court against Professor Pritchard by a man who calls himself a veterinary surgeon and is not. To my mind, sir, an honourable member of your profession would not gloat over such circum-

stance. On the contrary, he would ask himself—"Can it be possible that Professor Pritchard is ignorant of a simple matter of every-day practice? is it likely that the magistrate (Mr. Paget) is more competent to decide a question of veterinary practice than Professor Pritchard?" If "Radix," instead of rushing into print as a Zulu rushes at his enemy with his assegai, had permitted himself to answer the above questions, perhaps the thought would have occurred to him (as undoubtedly it would occur to every real veterinary practitioner) that there was a lapse of time between the date when the animal was first examined and the hearing of the case when it was brought up to the court. Such lapse of time, it is well known, is generally utilised by a defendant; especially if he be *un*fortunate enough to employ a mere hanger-on to the profession, instead of a respectable veterinary surgeon.

The truth is that it is mere childishness or bad animus on the part of "Radix" to pretend that he believes in the righteousnes of the magistrate's decision. If Professor Pritchard be incompetent, as "Radix" would have us believe, his rank in the profession should be lower than that of a full-fledged student. If he be competent, his evidence must be taken by the profession, unless they believe him capable of perjury. It will, however, be regarded as an amusing feature of this case, that from the moment since the summons was dismissed by Mr. Paget, the wretched horse, which was the subject of the prosecution, has been *non est inventus*. It has performed no labour, and we are assured has been well nursed, and is still under treatment.

The reflection cast on this Society by "Radix" will, I trust, be removed by the above remarks.

Royal Society for the Prevention
of Cruelty to Animals,
105, Jermyn Street.

I am, sir, yours, etc.,
JOHN COLAM, *Secretary.*

A NEW ENEMA INSTRUMENT.

To the Editor of the VETERINARY JOURNAL.

SIR,—In last month's issue of the VETERINARY JOURNAL, an illustration is given of a new enema pump, which is described as "being compact, handy, easily carried, and *only* costing about two guineas."

Seeing this notice has induced me to say a few words respecting a new enema tube, as I have termed it, which I have had made, and which is acknowledged by all who have seen or used it to be the simplest, cheapest, and the most compact, durable, and effectual of any yet invented. It can be carried in any pocket, save the waistcoat—a great *desideratum* to the veterinarian when travelling on horseback; it weighs under eight ounces, and cannot possibly get out of order however roughly handled. I never think of visiting those so-called Gripe or Colic cases without taking one, and in severe cases I always leave one for the attendants to use every few hours upon the patient, which they can readily do after seeing it once used. In several instances the owners have wished to keep one by them in readiness for the next case, *so I charge five shillings each for them*. At the time I am penning this I have three of them in use in different neighbourhoods. I also find this instrument useful for giving gruel, etc., *per rectum*, to patients suffering from Strangles, and other causes of abscesses in the region of the throat threatening Asphyxia, and where there is difficulty in deglutition. In horses, too, that are troublesome in taking medicines *per orem*, I have frequently given them by this method, such, for instance, as chloroformum, aconitum, ol. terebinth., etc., with very satisfactory results; though now in Colic cases I generally

use my hypodermic syringe, aided by two to four quarts of lukewarm soapy water, given *per rectum* with my enema tube. Again, for introducing such agents as *liq. sodii chlorid. dil.; inf. quassiæ; ol. terebinth. c. liq. calcis*, for the purpose of expelling *Oxyurides curvulæ* from the rectum, which parasites so often set up irritation about the anus of their "host," and cause obstinate "rubbing of the tail." Another advantage this instrument possesses is, that the fluid given runs into the bowels by its own gravity, without any force whatever being used, and this, I believe, is the reason that the patient stands so quietly during the operation, and does not reject the fluid so quickly as when it is forcibly introduced.

The manner of using the enema tube is simply as follows :—The patient is turned round in the stable in such a position that the hind-quarters stand highest. Have a pail by you containing about a gallon of lukewarm water, having a little soap dissolved in it ; insert the tube about four inches in the rectum, and pour the soapy water in the tube as quickly as possible by means of a jug, then withdraw the tube, and hold the animal's tail down for several minutes. I find that by giving a large quantity of fluid the first time it is soon rejected, and so effectually empties the rectum without having recourse to "backraking;" after this I give small quantities—about two quarts, which is usually retained for a long time, and sometimes I never see or hear of it being returned. By way of experiment I once poured two large stable pailfuls of water into a patient's rectum, and might have given more, and never saw a drop of it returned during the time—half an hour—that I stayed with the case, which was one of "stoppage in the bowels." It recovered on the following day.

Portability being a great object in the equipage of the army veterinary surgeon, I should strongly recommend this instrument as a substitute for the heavy, cumbersome barrel syringe, as it would occupy scarcely any room in the veterinary medicine chest, and is much handier, etc., to use.

I have the honour to be, sir,

Your most obedient servant,

Bishop's Stortford,
November 6th, 1879.

JAMES WEBB, M.R.C.V.S.,
Late V.S. in the Royal Horse Artillery.

THE RESPONSIBILITIES OF VETERINARY SURGEONS.

To the Editor of the VETERINARY JOURNAL.

SIR,—The very interesting and instructive paper on the above subject, read by Mr. George Fleming at the meeting of the Lancashire Veterinary Medical Association, and published in the last number of the VETERINARY JOURNAL, will no doubt lead to much comment. As I took part in the discussion which ensued after its reading, and as I then expressed some dissent from a few of its arguments, I beg to ask space for this letter. As a military veterinary surgeon, I venture my opinion, because it is a subject which I have frequently heard discussed in different parts of the country, and perhaps in the army we have a better chance of hearing unbiassed and independent views than the civilian practitioner.

To my mind, an amount of responsibility was assumed in the paper, and was apparently accepted by the meeting, which is out of proportion to the remuneration received by the medical man or the veterinary surgeon. Let me begin by quoting from the paper : "It has been well observed that where a person is employed in a work of skill, the employer buys both his labour and his judgment. He ought not to undertake the work if he cannot succeed, and he *should know* whether he can or not. Thus if a *farrier* undertakes the cure of a lame or diseased horse, he is bound to apply a reasonable degree

of skill to the cure, and if through his *ignorance* or bad management the horse dies he will be liable for the loss. So, if a ship's carpenter undertakes to build a ship," etc.—"Story on Bailments." The italics are mine, and I beg to call particular attention to them. The assumption of the writer, Story, quoted by Mr. Fleming, is evidently, from his using the term "*farrier*," and immediately afterwards employing the illustration of the *carpenter*, that the doctoring of a horse is a simple and uncomplicated matter like making a ship or a box or clock, or any other mechanical contrivance; and he therefore argues as if the surgeon could control the living body in the same way. He is not to blame for this, for it is the idea possessed by seven out of every ten men one meets, and is the foundation for the undeserved ridicule, and sometimes odium, to which surgeons and veterinary surgeons are too often subjected. It is, however, an idea engendered by ignorance of the wonderful structure of the animal body, and by forgetfulness that a living sentient organism, not made by human thought or power, is constantly changing, and is not, like the production of man, to be moulded at will. In its practical bearing on the question this was forcibly brought forward at the meeting by Sir Frederick Fitzwygram.

I beg to dissent from the opinion that a surgeon or veterinary surgeon is *justly* responsible at law for the consequences of his ignorance. If really clever lawyers held this opinion, cases would be so frequent that the judges of the land would have to be doubled; but those who have acted on this erroneous assumption have almost always found juries against them, and therefore an adviser is rarely found who counsels so rash a proceeding. A client might just as logically sue a solicitor who had advised him that he has a good case, but who finds in the result that he had no case at all.

In saying what follows, I hope I shall not be understood to be advocating the excuse of ignorance or malpractice: nothing is further from my thoughts. I only state my views as a contribution towards a right judgment between professional man and client. Who is to prove the ignorance of the professional man? Let me offer an illustration. One learned professor of human medicine says, "In Pneumonia I will bleed and deplete the patient;" another, equally eminent, says, "I will, on the contrary, give my patient plenty of brandy and strong stimulants;" another says, "I will give no medicine, and will do nothing except leave all to nature and good nursing;" another says, "I will apply mustard or some other strong counter-irritant to the skin of the chest;" another says, "I will not apply any irritant to the skin of the chest in Pneumonia, for to do so is likely to cause the patient much harm;" and still further, another, who can equally boast of success, says, "I will only for an hour or two at intervals pour cold water on the chest of my patient, and this treatment will give him the best chance of recovery." Now every one of these gentlemen is firmly convinced that his particular mode of treatment is the best, yet all are almost diametrically opposed to each other. Where is the ignorance, and where the bad management? This example alone shows that the "box and clock" argument is not of much value in this question.

Reasonable skill, of course, is necessary, but the common-sense view of the matter is, that the employer of the professional man, being free to choose, engages him because he thinks his ability, which as proved by the above illustration is only *matter of opinion*, will suit his purpose, and he is not entitled to fix a standard of knowledge unless there be some special agreement. Professional men succeed by *reputation*, and the public will never allow that all of them are competent; on the contrary, they are often found saying that it is impossible they can be so. The above view of the matter would therefore seem to have been hitherto generally accepted. It appears to me quite unreasonable to say, that because young men are granted a

diploma they are therefore assumed to be able to do everything connected with their profession with skill. We all know that they are not, and that some never will be ; therefore it would be monstrous to hold them legally responsible on medical points, where there is so much divergence of opinion.

A pending case would seem to show that a veterinary surgeon examining a horse is, by some people, thought to be liable even to the full value of the animal, if he should make a mistake, whether wilfully or not. At the meeting I said, "If this be the case, you will have to revise your fees. If you are examining a horse worth three hundred guineas for half a guinea, you are laying six hundred to one that you are right." I venture to say that no prudent man, if held legally responsible, will long be able to lay such absurdly disproportionate odds ; for we all know that the most careful and experienced veterinary surgeons cannot sometimes avoid mistakes in examinations for soundness. I have met a few who said No, but they have been young men without much experience, and time makes them wiser.

In the London *Times*, of October 15th, 1879, is a paragraph, on page 10, headed, "The Evidence of Experts," which forcibly bears on this subject. It states that the distinguished Italian professor, Tommassi, announced at a meeting of a congress of medical men assembled at Naples, that he had observed in criminal cases a practice which is indefensible in the presence of justice, of science, and of common sense : that is, the selection of experts for the defence by the advocate, and of experts for the accusation by the Attorney-General. This enormity, he said, ought to be abolished. The expert for the defence, having been selected by the advocate, is almost under an obligation to find excuses for the prisoner at the bar, while the expert for the accusation, having been selected by the Attorney-General, is disposed to support the views of the legal authorities. Of what value, then, can be the evidence of men which is, or appears to be, obligatory? In general, experts follow the lead of the advocate in excusing or accusing the prisoner. This cannot continue ; it is contrary to justice, to the dignity of medicine, and of the magistrate. The professor proposes, first, that in every province a body of experts should be instituted, who had made legal medicine their special study, and had undergone a corresponding examination, from whom, when there was any necessity, a selection should be made. Secondly, that the distinction between experts for the accusation and defence should be abolished ; that they should be selected by the advocate and the Attorney-General conjointly, and the number required should be drawn by lot.

Now, if in the above extract we substitute for "prisoner at the bar" and "Attorney-General," the words, "plaintiff" and "defendant," does not Professor Tommassi's reasoning apply to trials where the evidence of experts is taken in our own country?

When a trial is going to take place in which the soundness or sickness of a horse is involved, each side gets what professional evidence it can to support it. If any professional man is consulted, and his views do not agree with the side asking his opinion, the counsel takes good care not to call him, and *vice versâ*—in fact the solicitor takes care only to bring forward those who support his own case, and so the affair becomes a mockery of justice. This, of course, according to the present state of the law may only be considered right and proper ; but to me it appears wrong that the law should allow it. Why should not experts be selected, whenever practicable, by the court, and especially so where the merits of the case are only matters of opinion? Of course, matters of fact can only be proved by those who have seen them ; but advocates should certainly not be permitted to cast about for such professional evidence as supports their view of the case. If this be done, juries totally ignorant of medicine and surgery, and therefore quite incapable of

forming, except at hazard, a correct opinion, are influenced by a number of well-known names, and will sometimes give a verdict opposed to reason and common sense. I would therefore suggest that experts who give evidence on matters of custom, practice, and opinion should be selected by the court, and that they should not be chosen simply by advocates because they take the side of their clients.

If veterinary surgeons are subject to great pecuniary responsibility in the examination of horses, they must protect themselves. It is said to be impossible to do so by the wording of certificates; which opinion, however, is very much open to doubt. But granted its correctness, might not some form of printed agreement be kept by veterinary surgeons, to be signed by the person employing them before the examination of a horse, and saying that the opinion as to soundness is only given for what it is intrinsically worth, and that the veterinary surgeon will not be held answerable for mistakes. Also that he has only undertaken the examination on these terms. To sign this would only take a few seconds. Some veterinary surgeons, however, say that employers would not get horses examined on these conditions. My reply to this is that they have thus far done so, for they have not been hitherto aware that they had any redress even for a fraudulent, let alone a mistaken opinion. If it be said that any paper requiring signature would destroy confidence, I answer that I do not think it would if the practice were general. If it be said that purchasers often send horses by servants to be examined without any letter, or send instructions by telegraph, the obvious answer is that if veterinary surgeons find themselves "let in" to pay the value of two or three expensive horses, they will soon consider a little protective trouble as indispensable.

Unless veterinary surgeons are protected by some means or other, may not unscrupulous persons try to lay traps for them if they find that lucrative damages can be obtained by a successful action? Such actions could be ruinously used to serve private malice, and for purposes of extortion, and young practitioners, with not much money for law charges, might be crushed by them. In this matter it is the leading men of the profession who must take the initiative should active defence become necessary; and it is hoped that in such an event they will not be deterred, by a fear of having it said that they cannot have proper confidence in their own opinion and skill, from doing their duty. Sooner or later, if these actions at law are successful, medical men and veterinary surgeons will be obliged to find out means to protect themselves.

Even in the case of injuries in shoeing, veterinary surgeons have been much imposed upon; and it is said with much justice that only the apathy of the profession has prevented it from long ago emancipating itself from paying large damages for what, in many cases, is an unavoidable accident. Here again, however, the "box and clock argument" has been in most cases unhesitatingly accepted by both public and juries, and thus a very great injustice has been done to veterinary surgeons.

In writing here what I have done, I beg to disclaim any idea of becoming the defender of ignorance, either professionally or generally; my views are quite the opposite. We must, however, take care that in our efforts to raise the profession we do not burden it with charges that may crush it. In the examination of horses we cannot be too strict or conscientious, and anything fraudulent therein cannot be too severely reprobated. What I wish to guard against is any pecuniary punishment for mistakes which are sure to occur so long as human knowledge and skill are not infallible. The best guarantee of the professional man is his reputation, and the client who employs an adviser with a bad one has only himself to blame. As an almost universal rule, it may be said that veterinary surgeons are very con-

scientious in examinations for soundness ; therefore it behoves all who have the good of the profession at heart to be exceedingly severe with any offender in this respect.

The Defence Fund is worthy of all support, but if veterinary surgeons are true—and only as allies of justice is it desirable that they should be true—to each other, we should not find the profession the victim of *civil war ;* for such it really is when we see an array of witnesses with opposite opinions, where it seems extraordinary that there should be any cause for dispute.

Your faithful servant,

November 10*th*, 1879. JAMES LAMBERT, F.R.C.V.S.
Veterinary Surgeon, 17*th Lancers.*

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Your paper on "The Responsibilities of the Veterinary Surgeon" has given me more satisfaction than anything I have read for many a day. In offering my sincere thanks for your manly utterance, and my approval of the high ground you take in discussing the subject, permit me to add a word on one or two points in your essay.

It has not unfrequently been remarked to me that any veterinary surgeon or professor can be induced to swear according to instructions, provided a sufficient consideration be offered. I felt annoyed at this, because it is only too true of too many of my profession.

The three causes to which you trace this unfortunate state of things, each contributes, but is not, to my mind, sufficient to account for the anomaly. A veterinary surgeon may have a fair scientific knowledge, a budget of ethical laws, feel no jealousy or desire for notoriety, and yet fall into the errors which you deprecate. Why? Because there is not a spark of honour in his soul to which you may appeal. How seldom a veterinary surgeon can be called a gentleman in ordinary behaviour ; and I am not sure that this is altogether a matter for surprise. We must not forget that many members of the profession are taken from the lower ranks of society, and have not, therefore, enjoyed the advantages of culture during early life. Add to this the baneful influence of being brought into daily contact with grooms, carters, cowmen, horse-dealers, etc., etc., and need we wonder at the almost entire absence of the moral sense? How few open their minds to the refining agency of literature or art. Very few of us enjoy the luxury of good society. When you meet a veterinary surgeon, what does his conversation consist of? The size of his practice ; the number of patients he sees in one day ; the kind and number of horses he drives, etc., etc.

We must not lose sight of the withering effect of the inordinate love of money. Any man who estimates a fortune more highly than an honourable reputation has already taken one false step in the race, and it would be idle to expect reliable evidence from him in the witness-box.

That we are liable in cases of *malpraxis* is only too well known by those of us who attend valuable patients. Ever since the Paradise affair, I, for my part, have been very careful in pronouncing judgment in difficult cases, and when possible secure a consultation with a neighbour. This, however, must be conducted with care, for not many years ago I lost a client (for a time) through confiding in the honourable feeling of a brother veterinary surgeon.

I wish every member of our profession could be persuaded to read and digest your admirable paper, and what is more important still, translate it into daily practice.

Yours truly,

Newbury, Berks, *November 6th*, 1879. J. FRASER, M.R.C.V.S.

COMMENTS.

In the Editorial for September we called attention to a sad case of Hydrophobia occurring in Dublin, the victim, the daughter of a physician in the Irish capital, having been bitten in the lip by a pet dog, which had just returned from a rabiferous excursion so characteristic of the malady. We pointed out the great danger that was to be apprehended from the perambulation of this rabid animal, and warned the authorities to take steps to prevent the spread of the horrid malady. The warning appears to have been in vain, and our predictions are amply verified; for we now read of mad dogs running through the streets of Dublin, inoculating every creature they meet. For instance, we find the following notice in the *Freeman's Journal* for October 20th:

"On Saturday, about twelve o'clock, a good deal of excitement was caused in Moore Street by the fury of a mad dog. The dog was a small cur, and had a short rope round his neck, from which it would seem that he had been tied up and had made his escape. He was pursued by a crowd of people, who, however, made way for him in all directions when he made a rush on them. He first bit a child on the arm; he then rushed at a boy that was passing, seized him by the leg, leaving the mark of his teeth, and took a large piece out of his trousers in his bite. He attempted to bite the boy again in the side, and then jumped at his face, but did not succeed in biting him. A drayman then appeared on the scene, and with great courage seized the rope tied to the animal and jumped on his neck, and with the help of the crowd destroyed him, but not before the drayman had been bitten in the hand, leaving in it the mark of his teeth. The boy, child, and drayman were accompanied by constable 185 C to Jervis Street Hospital, and had the wounds cauterised and dressed."

As usual, we find "Cures" in profusion sent to the newspapers, all of which are worth less than the printer's ink that makes them public. Why, in the name of terrified and suffering humanity, and we might add, animality, cannot the Government adopt common-sense and effective measures, instead of leaving everything to chance or Providence? As a specimen of the multitude of preventive compounds which are said to be effective, the following is reprinted from the above named newspaper.

"REMEDY FOR PREVENTING HYDROPHOBIA."

"One ounce Barbadoes tar,
One ounce of filings of pewter,
One ounce dried garlic, and
A small handful of rue—

say about as much as one could grasp between the points of the thumb and forefinger boil slowly in a quart of water until reduced to a pint, keeping the vessel closely covered during the process.

"Take a wine-glass every morning for three mornings, and at the next change of the moon take a fourth wine-glassful. Use within eight days after being bitten."

It is to be feared that in our dealings with this grave malady we are almost as confirmed fatalists as the followers of Mahomet. "No one who has lived in Turkey," says the *Daily Telegraph* of November 15th, "can fail to have been perplexed by the circumstance that Hydrophobia seems but seldom to affect the dogs of Islam, although millions of masterless curs infest the streets of Moslem towns and villages. It appears, however, that an unusually long and hot summer season, attended by drought, resulted some weeks ago in an outbreak of Hydrophobia among the canine scavengers of Samsun on the Black Sea coast. At first small notice of the calamities caused by the afflicted dogs was taken by the local authorities; but by-and-bye, as rabid Samsunites became daily more and more common in the town, a deputation of citizens waited upon the Vali to implore that some steps might be taken to save the rest of the inhabitants from the horrors of Hydrophobia. His Excellency replied that 'he would think about it,' and a few days later promulgated a decree, of which the following is a literal translation: 'In consideration that the dogs of Samsun are entrusted with the cleansing of our town, in virtue of which function they enjoy certain civic rights which cannot be contested by any sane person, the Governor deems it obligatory upon him, ere he proceed to stringent measures condemned by his conscience, to

submit this matter and the grave facts connected with it to the superior religious authorities in Stamboul.' This decree was tardily followed by a *fetwah* from the Sheik-ul-Islám, sentencing the dogs to life-long exile from the town. Next day the offending scavengers were collected, bound, and conveyed under a strong escort to a *tcharchembe* some miles distant from Samsun. Delivered from their persecutors, the Samsunites breathed more freely ; but not for long ! A day or two later the banished dogs began to put in an appearance, by twos and threes at a time, in their old familiar quarters ; whereupon pious men exclaimed, 'See the finger of Allah, who protects oppressed innocence !' and the persons subsequently bitten were comfortably regarded by the orthodox Vali as "phantasts and visionaries.'"

ANSWERS TO CORRESPONDENTS.

V.S.—A member of the Royal College can present himself for the Fellowship Degree if he has been in practice (either on his own account or as assistant) for five years. The regulations and subjects for examination you will find on page 45 of the register, etc., of the College. Through the powers conferred by the supplemental charter, the name of a veterinary surgeon can be removed from the register for misconduct. No name has yet been removed, and the question as to the nature of the offence which would necessitate such a serious punishment, would have to be decided by the Council in each particular case.

AMATEUR.—The person to whom you applied about your dog's disease is a quack. Take the animal to a veterinary surgeon. There are several in London who make canine disorders a special study.

COMMUNICATIONS from Messrs. Nunn, Oliphant, Steel, Poyser, Hedley, Frank Smith, McGavin, Santy, Furnivall, Jones, and others, as well as the Reports of the Central and Yorkshire Societies are unavoidably held over until next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. B. Prentice, Longford ; Professor Walley, Edinburgh ; "Cyclop" ; A. L. Butters, Sunderland ; A. E. Queripel, Royal Artillery, Punjab ; R. Poyser, The Carabiniers, India ; H. M. Chichester, Charlton ; J. Wilson, Nantwich ; W. Runciman, Market Deeping ; Professor McCall, Glasgow ; J. H. Steel, London ; R. Ward, London ; "B.A." ; "V.S." ; J. Webb, Bishop's Stortford ; J. Lambert, 17th Lancers ; A. H. Santy, Norwich ; "Virtute et Labore" ; J. Fraser, Newbury ; F. Smith, Royal Artillery, Woolwich ; J. Storrar, Chester ; "An Old Cockney" ; W. Shipley, Great Yarmouth ; Dr. Thin, London ; A. E. Macgillivray, Banff ; J. Rowe, London ; S. Locke, Manchester ; C. Steel, 16th Lancers, Brighton ; J. A. Nunn, Royal Artillery, Jellalabad Field-Force, Afghanistan ; J. McGavin, Montgomery ; J. Colam, London ; W. Furnivall, Kingston-on-Thames ; "Vetula Avis ;" M. Hedley, Dublin ; W. H. Coates, London ; A. Jones, Queen's Bays, Dublin.

BOOKS AND PAMPHLETS : *W. Lauder Lindsay, M.D.*, Mind in the Lower Animals in Health and Disease ; *Sir Thomas Watson, Bart., M.D.*, The Abolition of Zymotic Diseases ; *A. Zundel*, La Dépécoration ; Bulletin de la Soc. Centrale de Méd. Vétérinaire ; *P. Rivolta*, Studi fatti nel gabinetto d'Anatomia Pathologica della R. Scoula Superiore Veterinaria di Pisa ; *J. Vaughan*, Strangeway's Veterinary Anatomy ; *A. McNeill, M.D.*, A Treatise on Hydrophobia.

JOURNALS, ETC. : *Recueil de Méd. Vétérinaire ; Repertorium der Thierheilkunde ; Gardener's Magazine ; Medical Press ; Journal of Royal Geographical Society ; Journal of National Agricultural Society of Victoria ; Annales de Méd. Vétérinaire de Bruxells ; Der Thierarzt ; Wochenschrift für Thierheilkunde und Viehzucht ; Archives Vétérinaire ; L'Echo Vétérinaire ; Journal de Méd. Vétérinaire ; Dublin Journal of Medical Science ; Lancet ; Nature ; Archiv für Thierheilkunde ; Animal World ; British Medical Journal ; American Veterinary Review.*

NEWSPAPERS : *Freeman's Journal ; Marylebone Mercury ; Scotsman ; Montreal Daily Witness ; Edinburgh Courant ; Paddington Times ; Colman's Rural World ; American Traveller ; Glasgow Herald ; Irish Times ; Scotsman.*

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